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13. ABSTRACT (Maximum 200 words) <p>THE REPORT OF COMBAT TRAUMA SURGICAL TRAINING (CTST) AT BEN TAUB GENERAL HOSPITAL (BTGH) DETAILS THE BACKGROUND, CONCEPT, CONDUCT, AND RESULTS OF THE RECENTLY CONCLUDED (SEPTEMBER 1998) CTST ROTATION OF AN ARMY FORWARD SURGICAL TEAM (FST) AT BTGH.</p> <p>THE STATED PURPOSES OF THE PILOT STUDY WERE MET IN FULL. (1) THE PILOT DEMONSTRATED THAT CTST OF AN ENTIRE FST WAS LEGALLY POSSIBLE. (2) THE PILOT DEMONSTRATED THAT NON-GRATUITOUS CTST, WITH A MEASURE OF REIMBURSEMENT FOR HEALTH CARE SERVICES RENDERED, IS CONTRACTUALLY POSSIBLE. (3) A TRAINING PLAN WAS DEVELOPED THAT MEASURED CTST BENEFIT AND LINKED THAT BENEFIT TO INCREASED FST SURGICAL READINESS. (4) A COST ANALYSIS OF THE CTST PILOT ROTATION TO INCLUDE UPFRONT AND OPPORTUNITY COSTS WAS CONDUCTED. (5) THE COST AND TRAINING BENEFITS OF THE PILOT PROJECT WERE REPORTED TO ALL APPROPRIATE JOINT MEDICAL AGENCIES AND EACH OF THE SERVICE SURGEONS GENERAL. BASED ON THE PILOT STUDY DATA THE AUTHORS FURTHER RECOMMEND THE EXECUTION OF A FEASIBILITY STUDY ESTABLISHING BTGH AS A JOINT TRAUMA TRAINING CENTER (JTTC) WITH PERMANENT MILITARY STAFF ASSIGNED IN OBSERVER CONTROLLER ROLES TO FACILITATE THE TRAINING.</p>				
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# **The Ben Taub Pilot Project**



**September 1998**

## **Report of Combat Trauma Surgical Training at Ben Taub General Hospital**



**+ Emergency  
Trauma Center**

**→ Ben Taub  
General Hospital**

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**January 1999**

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## **Executive Summary**

This paper details the background, concept, conduct, and results of the Ben Taub Pilot Project in Combat Trauma Surgical Training (CTST) conducted at Ben Taub General Hospital (BTGH) during September 1998.

CTST is defined as trauma sustainment training for military surgical personnel through Level I trauma centers. CTST originated in February of 1996 when Congress passed legislation requiring the Department of Defense (DOD) to conduct a Demonstration Project of trauma training in civilian hospitals. Furthermore, the law required the civilian hospitals to reimburse the Government for the health care services provided by the military medical personnel undergoing the trauma training. This legislation addressed Congressional concerns over reports from General Accounting Office (GAO) analysts, civilian trauma experts, and some military trauma experts that the level of peacetime trauma exposure for our military medical personnel was insufficient to ensure optimal trauma care outcomes on the battlefield.

In September 1997, the three services reported to the Defense Medical Readiness Training and Education Council (DMRTEC) on their plans and programs to implement the CTST standards for their general surgeons. Each service had isolated CTST programs, which had managed to train a handful of individual surgeons at civilian trauma centers under gratuitous contracts (i.e., at full government expense without reimbursement for health care services rendered). These initial programs achieved limited success and provided minimal cost benefit analysis information.

The Great Plains Regional Medical Command (GPRMC) was convinced that the continued decentralized execution of CTST for individual surgeons under gratuitous civilian contracts was a high cost, low benefit program. Therefore, in December 1997, GPRMC informed the Defense Medical Readiness Training Institute (DMRTI) of its intent to develop a centralized CTST model for military trauma teams within a civilian trauma center. Specifically, the GPRMC intended to conduct a one month CTST pilot study where an entire Army Forward Surgical Team (FST) would train at BTGH, Houston, Texas, under a non-gratuitous contract where the civilian institution would provide a measure of reimbursement for health care services rendered.

The CTST Pilot Study at BTGH was conducted in September 1998 and met each of the stated purposes in full. The pilot demonstrated that CTST of an entire FST was legally possible. The pilot demonstrated that non-gratuitous CTST, with a measure of reimbursement for health care services rendered, is contractually possible. The training plan developed for the pilot measured CTST benefit and linked that benefit to increased FST surgical readiness. The cost analysis of the CTST pilot rotation provided a model to measure upfront and opportunity costs. Lastly, the costs and training benefits of the pilot project were reported through Army command channels, to appropriate joint medical agencies and to each of the service Surgeons General.

Based on the pilot study data (i.e., favorable cost/benefit ratio and favorable site), the authors further recommended the execution of a feasibility study establishing BTGH as a Joint Trauma Training Center (JTTC). The U. S. Army Surgeon General accepted the author's recommendations in full and directed the execution of the JTTC Feasibility Study on 14 January 1999. On 5 February 1999 the Surgeons General of the U. S. Air Force and U. S. Navy concurred and directed their appropriate staff agencies to supplement the U. S. Army permanent staffing. As a result, a joint team of healthcare providers and administrators will move to Houston in July 1999 to execute the JTTC Feasibility Study.





REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
41<sup>st</sup> COMBAT SUPPORT HOSPITAL  
FORT SAM HOUSTON, TEXAS 78234-6200

MCGA-CSH

27 January 1999

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Report of Combat Trauma Surgical Training At Ben Taub General Hospital

1. REFERENCES:

- a. FM 25 – 100/101, "Training the Force"
- b. FM 8-10-25, "Employment of Forward Surgical Teams: Tactics, Techniques, and Procedures"
- c. ARTEP 8-518-10 MTP, "Mission Training Plan for the Forward Surgical Team and Forward Surgical Team (Airborne)"
- d. GAO Report (GAO/NSIAD-98-75) April 98, "Medical Readiness: Efforts Are Underway for DOD Training in Civilian Trauma Centers"  
<http://www.gao.gov/new.items/ns98075.pdf>
- e. "Resources for the Optimal Care of the Injured Patient." Committee on Trauma, American College of Surgeons.

2. PURPOSE: The purpose of this memorandum is to report on the background, concept, conduct, and results of the recently concluded (September 1998) Combat Trauma Surgical Training rotation of an Army Forward Surgical Team (FST) at Ben Taub General Hospital.

3. BACKGROUND:

- a. In February of 1996, Congress passed legislation requiring the Department of Defense (DOD) to conduct a Demonstration Project of trauma training in civilian hospitals. Specifically, the legislation called for the training of military medical personnel (surgeons were not exclusively named). Furthermore, the law required the civilian hospitals to reimburse the Government for the health care services provided by the military medical personnel undergoing the trauma training. This legislation addressed Congressional concerns over reports from General Accounting Office (GAO) analysts, civilian trauma experts, and some military trauma experts that the level of peacetime trauma exposure for our military medical personnel was insufficient to ensure optimal trauma care outcomes on the battlefield.

b. In June 1996, The Office of the Assistant Secretary of Defense for Health Affairs (ASD/HA) established the Defense Medical Readiness Training and Education Council (DMRTEC) which was responsible for developing joint medical readiness training policy and overseeing the services' medical training programs, including those relating to trauma training. The Defense Medical Readiness Training Institute (DMRTI) was created to execute the policy decisions and oversight functions of the DMRTEC. In August 1996, the ASD/HA organized the Combat Trauma Surgical Committee (CTSC) to study policy options for sustaining wartime trauma surgical capabilities. The Committee was tasked with creating a program for Combat Trauma Surgical Training (CTST), defined as trauma sustainment training for military surgical personnel through Level I trauma centers. The Committee envisioned trauma training for all military surgical personnel, to include trauma teams. However, the Committee felt the most expeditious policy option to implement CTST was to focus first on the training of individual general surgeons. In February 1997, the Committee established the following CTST standards for all military general surgeons: two weeks of trauma sustainment training (every two years) at a Level I trauma center. The training would include hands-on management of at least twenty trauma patients and at least twenty hours of didactic trauma Continuing Medical Education training. The three service Surgeons General approved the recommendations, and in May 1997 the ASD/HA ordered the services to implement training based on the established CTST standards.

c. In September 1997, the three services reported to the DMRTEC on their plans and programs to implement the CTST standards for their general surgeons. Each service had isolated CTST programs, which had managed to train a handful of individual surgeons under gratuitous contracts (i.e., at full government expense without reimbursement for health care services rendered). The consensus reached at the meeting was for the three services to continue with decentralized execution of CTST, focused on the training of individual surgeons.

d. In December 1997, the Great Plains Regional Medical Command (GPRMC) informed the DMRTI of its intent to develop a centralized CTST model for military trauma teams within a civilian trauma center. Specifically, the GPRMC intended to conduct a one month CTST pilot study where an entire Army FST would train at Ben Taub General Hospital (BTGH), Houston, Texas, under a contract with the civilian institution providing a measure of reimbursement for health care services rendered.

#### 4. PILOT CONCEPT:

a. The GPRMC was convinced that the continued decentralized execution of CTST for individual surgeons under gratuitous civilian contracts was a high cost, low benefit program. Decentralized execution of CTST was associated with enormous hidden administrative costs. Each individual CTST initiative required extensive communication with a civilian trauma director, arduous negotiations, and then a complex contract process that met that particular institution's and state medical board requirements. CTST at multiple sites obviously would be of variable benefit based on the contract features and training opportunities unique to each civilian training institution. In addition, the CTST focus on individual surgeon training under gratuitous contracts was suboptimal. The assumption that a military surgeon would receive adequate trauma experience undergoing two weeks of CTST at an unfamiliar civilian trauma center was

considered dubious, at best. It was felt that several days, even a full week of training would be marginal while the surgeon oriented to the facility, its personnel, its procedures and policies. Even if CTST improved the individual experience of the surgeon, it was felt that this would not ensure improved trauma outcomes. Military experience and civilian trauma literature confirmed that trauma systems characterized by echelons of trauma care, linked by rapid pre-hospital transport, culminating with care provided by well trained trauma teams—saved lives. In short, there was little data to support the contention that the increased trauma training of individual surgeons would improve outcomes in the absence of increased trauma team training. The GPRMC concluded, for CTST to be of benefit, the training must be centered on deployable surgical teams and that the training must be tied to unit readiness training. For the CTST to be cost-effective, some measure of civilian reimbursement for health care services rendered had to be a feature of the training contract. These conclusions were consistent with our understanding of Congress' intent: that CTST should culminate in training of surgical teams, improve surgical readiness, and be non-gratuitous.

b. The GPRMC concluded that a pilot study of CTST should be conducted for an Army FST. By doctrine, FSTs will provide the mainstay of far forward surgical support on future Army battlefields. Compared to other Corps level surgical units, FSTs will conduct combat trauma surgical care with fewer resources, yet, have a greater likelihood of sustaining a mass casualty event. Under those circumstances, it was concluded by the GPRMC that the greatest need for efficient trauma care resided at the level of the FST. If CTST could improve a surgical unit's readiness, it was decided that the training benefit should be demonstrated where it was needed most, at the level of the FST.

c. The GPRMC concluded the Army's sole Level I trauma center (Brooke Army Medical Center) had an inadequate volume of trauma cases to serve as an optimal site for the pilot study. Therefore, the GPRMC decided to leverage a civilian trauma institution (BTGH) to conduct its CTST pilot study. BTGH was chosen as the pilot site for the following reasons:

(1) The Chief of Staff at BTGH, Dr. Kenneth Mattox, is a renowned civilian trauma expert and is a strong supporter of CTST.

(2) BTGH is a pre-eminent clinical and research trauma center with significant contributions to the trauma literature.

(3) BTGH has a high volume of trauma cases (approximately 2800 cases per year with 900 of these secondary to penetrating trauma) appropriate for CTST.

(4) CTST opportunities at BTGH are optimal. Competition for training opportunities at BTGH are minimal as BTGH is a County Hospital with adequate but austere funding and staffing. The BTGH staff welcomes the opportunity to share the trauma workload with well-trained, fully certified military personnel. Furthermore, the trauma services provided at BTGH are totally under the control of the General Surgery Service and Dr. Mattox. There are no emergency room physicians, trauma fellows, or intensivists to compete for training opportunities.

SUBJECT: Report of Combat Trauma Surgical Training At Ben Taub General Hospital

(5) Dr. Mattox and BTGH were willing to permit, under BTGH supervision and guidance, CTST at the individual provider, team, and unit level. In short, the culminating pilot training event was for trauma victims to be cared for by the FST, in a linear fashion, exactly as they would on a battlefield. FST medics would stabilize and transport the patients to the BTGH emergency room. Major trauma cases would then be preferentially shunted to Army trauma teams that would resuscitate, operate, and recover the patients (without BTGH personnel intervention unless that help was deemed necessary by the BTGH supervisors).

(6) BTGH was willing to conclude a non-gratuitous contract with GPRMC (BTGH paid for the food and housing of the FST personnel undergoing CTST).

(7) Temporary Texas State licensing mechanisms existed to license the FST surgeons, anesthesiologists, nurses, and licensed vocational nurses for CTST at nominal cost. Operating room technicians and emergency medical technicians did not require Texas licensing.

d. The purposes of the pilot study were:

(1) To demonstrate that CTST of an entire FST was legally possible.

(2) To demonstrate that non-gratuitous CTST, with a measure of reimbursement for health care services rendered, was contractually possible.

(3) To develop a training plan that measured CTST benefit and linked that benefit to increased FST surgical readiness.

(4) To perform a cost analysis of the CTST pilot rotation to include upfront costs (i.e., licenses, travel, housing, and per diem) and opportunity costs (i.e., lost productivity or replacement costs the military treatment facilities incurred while providing pilot personnel for CTST at BTGH).

(5) To report the costs and training benefits of the pilot to the DMRTEC, the DMRTI, and Army Medical Command channels.

e. Armed with this pilot data, senior Army decision-makers could then decide whether additional FST rotations were warranted based on a favorable cost/benefit analysis. Additional FST rotations could be conducted to validate and standardize the CTST model for all Army FSTs and for FST slices from the remaining Corps level surgical assets. The finalized CTST model for FSTs could be used by our sister services to develop similar unit-level CTST training models for their surgical assets. The DMRTI could identify from BTGH the necessary institutional requirements to conduct unit-level CTST and use this data to expand the program to other appropriate civilian trauma centers. In short, by first developing a single unit-level CTST model at one civilian trauma center with an ideal training base, the means to improve the surgical readiness of all military surgical units could be achieved.

5. PILOT CONDUCT: Enclosure #1 contains the contract utilized to conduct the pilot study. It should be noted the contract was followed, as written, with the following exception. The


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contract called for a 61JM4, military trauma specialist, to be assigned to BTGH during the conduct of the pilot to supervise the FST personnel. By mutual agreement with BTGH, this requirement was verbally waived. Enclosure #2 contains the training plan utilized to conduct the pilot study. The training plan was followed as written.

6. PILOT RESULTS: Enclosure #3 provides a detailed analysis of the pilot's training data. Enclosure #4 provides the pilot's cost analysis. Enclosure #5 summarizes the pilot's results to include recommendations for future CTST programs. Enclosure #6 is a copy of the briefing as presented to the Army Surgeon General. Enclosure #7 explains the outcome of the briefing to the Surgeon General and lists the acknowledgements of the authors. Enclosure #8 is a compact disk containing all applicable files to replicate this project.

7. The points of contact for this report are the undersigned at DSN 429-0266, commercial 210-916-0266, and e-mail col\_cass\_conaway@smtplink.bamc.amedd.army.mil or MAJ Kyle D. Campbell at DSN 429-2088, commercial 210-916-2088 or e-mail maj\_kyle\_campbell.



CASS W. CONAWAY  
COL, MC  
Commanding

8 Encls

- 1: Legal Contract
- 2: Training Plan
- 3: Training Analysis
- 4: Cost Analysis
- 5: Summary/Recommendations
- 6: CTST Briefing
- 7: Outcome of CTST Project
- 8: CTST Compact Disk

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Deputy Assistant Secretary of Defense for Health Services, Operations and Readiness  
Deputy Chief of Staff, Operations, Health Policy and Services  
Defense Medical Readiness Training Education Council

**AGREEMENT BETWEEN HARRIS COUNTY HOSPITAL DISTRICT  
AND UNITED STATES GOVERNMENT ON BEHALF OF  
GREAT PLAINS REGIONAL ARMY MEDICAL COMMAND FORT SAM HOUSTON,  
TEXAS, AND BAYLOR COLLEGE OF MEDICINE**

THIS AGREEMENT is made and entered into by and between the Harris County Hospital District, a political subdivision organized under the laws of the State of Texas, on behalf of its Ben Taub General Hospital, hereinafter referred to as "the District," and the United States Government on behalf of the Great Plains Army Medical Command Fort Sam Houston, Texas, hereinafter referred to as the "U.S. Army", and Baylor College of Medicine, hereinafter referred to as "Baylor."

**WITNESSETH:**

WHEREAS, the District is the owner and operator of three Hospitals, Ben Taub General Hospital, Lyndon B. Johnson Hospital and Quentin Mease Hospital, and numerous neighborhood clinics, all situated in Harris County, Texas, providing medical and hospital care to the indigent ill and other residents of Harris County, Texas; and

WHEREAS, the District's Ben Taub General Hospital has established an approved trauma center that has been accredited by the Joint Commission on Accreditation of Healthcare Organizations, hereinafter referred to as "BTGH Trauma Center"; and

WHEREAS, the BTGH Trauma Center is a Level I trauma center, verified by the American College of Surgeons and designated by the Texas Department of Health; and

WHEREAS, it is in the best interests of the U.S. Army's Great Plains Regional Medical Command ("GPRMC") to use the clinical facilities of Ben Taub General Hospital to provide U.S. Army medical personnel with clinical experience in trauma care; and

WHEREAS, it is in the best interests of the District for its Ben Taub General Hospital to receive and use the clinical services of U.S. Army medical personnel;

NOW, THEREFORE, for and in consideration of the premises and in further consideration of the matters hereinafter set forth, the District and the U.S. Army do hereby stipulate and agree as follows:

**I.**

**THE PROGRAM**

A. GPRMC will arrange the assignment to District's Ben Taub General Hospital of one twenty-soldier Forward Surgical Team, hereinafter called "FST", to receive clinical experience in trauma care for a one month period. In addition, the GPRMC will assign one trauma critical care certified surgeon to Ben Taub General Hospital for trauma staff duties for

a six-week period, commencing two weeks prior to the assignment FST personnel to Ben Taub General Hospital.

B. It is understood and agreed that the purpose of this Agreement is to enhance the clinical trauma experience of the FST healthcare providers in pre-hospital transportation of trauma patients, triage, resuscitation, surgical intervention, intensive care, and wound care. The FST personnel will receive individual and team level experience in trauma care while utilizing the staff, facilities, and patients of Ben Taub General Hospital. The U.S. Army agrees to use the District's facilities only for the purposes set forth in this Agreement.

C. It is understood and agreed that both GPRMC and the Administrator of Ben Taub General Hospital will, in writing, establish the dates for the assignment of FST personnel to Ben Taub General Hospital at least 60 days prior to arrival of the FST personnel.

D. It is understood and agreed that no agent, servant, or employee of District or Baylor shall, for any purpose, be deemed an agent, servant, or employee of the U.S. Army or be permitted to perform services of any kind on behalf of the U.S. Army. It is further understood and agreed that the U.S. Army medical personnel assigned to Ben Taub General Hospital shall not be considered employees or agents of the District or Baylor. The U.S. Army further agrees to cooperate with and/or assist the District, Baylor, and/or its representatives in any and all investigations or inquiries into incidents in which the District, Baylor, and/or its representative deems the U.S. Army's assistance will be beneficial.

E. It is understood and agreed that the U.S. Army will not provide any compensation to District or Baylor in connection with the services provided by U.S. Army personnel under this Agreement. It is further understood and agreed that the U.S. Army personnel are expressly prohibited from receiving any monetary payments or contributions from the District or Baylor, with the exception of meals, which will be provided at Ben Taub General Hospital.

F. The assignment of U.S. Army medical personnel at Ben Taub General Hospital is not intended to cause, nor will it result in, the displacement of any District or Baylor employees or impair any existing contracts for services.

## II.

### SEPARATE JURISDICTION

A. The U.S. Army will continue as it has in the past to operate its medical program and to retain all jurisdictional powers incident to its separate operation, including the power to determine the general and fiscal policies of its medical program.

B. The District will continue to operate the facilities of the District in a manner and with standards consistent with its purpose of providing quality patient care. The District shall

retain over its Ben Taub General Hospital and facilities all jurisdictional powers incident to its separate ownership and operation, including the power to determine general and fiscal policies relating to the operation of its facilities. The Board of Managers of the District shall retain final jurisdiction over the administration and supervision of the facilities of the District, including all patient services and the types of activities occurring within any or all facilities of the District.

### III.

#### RESPONSIBILITIES OF GPRMC

A. Provide twenty FST health care providers, in the distribution listed below, to be assigned to Ben Taub General Hospital for a one month period:

- (3) 61J00 General Surgeons
- (1) 61M00 Orthopedic Surgeon
- (2) 66F00 Nurse Anesthetists
- (1) 66H8A Critical Care Nurse
- (1) 66E00 Operating Room (OR) Nurse
- (1) 66H00 Emergency Room (ER) Nurse
- (3) 91C Licensed Vocational Nurses (LVNs)
- (3) 91D OR Technicians
- (4) 91B Emergency Medical Technicians (EMT's)
- (1) 70B67 Health Services Administrator

B. The FST personnel will have the following qualifications prior to arrival at Ben Taub General Hospital: the FST physicians, registered nurses, anesthetists, and LVNs will have valid, current, and unrestricted state (not necessarily Texas) licenses. The physicians will all be board certified or eligible. The anesthetists will be certified by the American Association of Nurse Anesthetists Council. The following U.S. Army training is mandatory prior to clinical specialization: ICU and OR Nurses will have undergone 16 week training courses, the OR technicians will have undergone 6 weeks of didactic and 6 weeks of on-the-job training, and the EMTs will have received 10 weeks of didactic and practical training.

C. While at Ben Taub General Hospital, the U.S. Army personnel will be credentialed and conform to applicable District rules and procedures regarding medical staff membership. The FST physicians will function as trauma fellows under the direction of the Ben Taub General Hospital's Department of Surgery (General Surgeons) and the Ben Taub General Hospital's Department of Orthopedics (Orthopedic Surgeon). The registered nurses, licensed vocational nurses, OR technicians, and EMTs will perform patient care duties consistent with both U.S. Army hospital and Ben Taub General Hospital's scopes of practice and under the direction of the Ben Taub General Hospital's Department of Nursing. The nurse anesthetists will perform patient care duties consistent with both U.S. Army hospital and Ben



Taub General Hospital's scope of practice and under the Ben Taub General Hospital's Department of Anesthesia.

D. Provide a 61JM4 (Trauma and Critical Care trained and certified) surgeon who will rotate through Ben Taub General Hospital for a two week orientation tour of duty, immediately prior to the assignment of FST personnel to Ben Taub General Hospital. The GPRMC expressly agrees to pay for the food and all other expenses of the 61JM4 staff surgeon for the six week duration of his duty, including the FST orientation and the FST rotation..

E. While assigned to Ben Taub General Hospital, the 61JM4 surgeon will function as a junior staff member of the Ben Taub General Hospital's Department of Surgery and will be responsible for the following:

1. Instruct, supervise, and monitor the FST personnel;
2. Ensure that all FST personnel comply with Ben Taub General Hospital's rules and applicable instructions;
3. Coordinate with designated District and Baylor officials on the working assignments of the FST personnel to include attendance at selected conferences, courses, and programs conducted at Ben Taub General Hospital; and
4. Maintain accurate personnel records and reports developed during the course of the assignment of FST personnel to Ben Taub General Hospital.

F. The U.S. Army shall assure that its medical personnel comply with licensure requirements set forth by the medical licensing authorities of the State of Texas for participation of U.S. Army medical personnel in providing medical and trauma care at Ben Taub General Hospital. GPRMC agrees to pay all required Texas State licensing fees for the U.S. Army medical personnel at Ben Taub General Hospital.

G. GPRMC agrees to provide appropriate administrative support to secure necessary information, applications, licensures, and credentialing in a timely manner, as required by the District. Further, the 70B67 Health Services Administrator will assist the 61JM4 surgeon and the FST commander in their administrative duties while at Ben Taub General Hospital. In addition, the U.S. Army, in conjunction with the District, will provide the necessary personnel to carry out its responsibilities under this Agreement in order to insure safe and competent delivery of patient care. GPRMC agrees that its personnel will emphasize the patient's right to privacy and protect the confidentiality of all records relating to patient care in accordance with all applicable laws.

H. The US Army agrees that any and all claims, including but not limited to claims for personal injury, death, workers compensation or injury to property, demands, causes of action, liabilities, costs, damages, expenses, and attorneys' fees asserted or adjudged against or incurred by the District and Baylor resulting from the acts or omissions of U.S. Army medical personnel, whether or not same is caused by U.S. Army medical personnel negligence or not shall be determined by applicable federal law.

#### IV.

#### RESPONSIBILITIES OF DISTRICT

A. In exchange for the services to be provided by U.S. Army medical personnel at its Ben Taub General Hospital, District agrees that it will be responsible for securing housing facilities for U.S. Army medical personnel during their assignment to Ben Taub General Hospital and the District further agrees to pay the costs of such housing expenses up to \$8,000.00. In addition, the District agrees to provide the following:

1. Provide reasonable clinical and related facilities needed for U.S. Army medical personnel.

2. Arrange schedules that will provide the FST personnel with maximum exposure to trauma care, as consistent with Ben Taub General Hospital Trauma surgery team procedures. All FST personnel will work 40 to 60 hours per week on eight hour or twelve hour evening and night shifts. All LVN, OR technician, and EMT personnel will have a U.S. Army nurse on duty with them, either directly or indirectly supervising their duty.

3. Designate an official to coordinate the services provided by FST at Ben Taub General Hospital. This will involve planning with Baylor faculty or staff members for the assignment of the FST personnel to specific clinical cases, and experiences, including their attendance at selected conferences, clinics, courses and program conducted under the direction of Ben Taub General Hospital.

4. Provide reasonable classroom, conference, office, storage, dressing and locker room space for participating FST personnel, and their faculty or staff supervisors.

5. Grant U.S. Army personnel administrative privileges typically enjoyed by medical staff at Ben Taub General Hospital.

6. Permit on reasonable request, the inspection of clinical and related facilities by government agencies or other agencies charged with the responsibility for accreditation of Department of Defense programs to train military surgical personnel in civilian Trauma Centers.

7. Provide emergency medical and dental treatment to U.S. Army medical personnel while training at Ben Taub General Hospital. The cost of such treatment will be paid for by the U.S. Army.

B. The liability of District under the terms and provisions of this Agreement, and all amendments and supplements thereto, is expressly limited to the amount of funds hereinbelow certified available for satisfying District's obligations under the terms and provisions of the Agreement, and all amendments and supplements thereto, and any additional funds for such purposes which may, from time to time, be certified available for such purpose by the District's Board of Managers, and when and if all the funds so certified are expended for the purpose of satisfying District's obligations to U.S. Army under the terms and provisions of this Agreement, and all amendments and supplements thereto, the sole and exclusive remedy of U.S. Army shall be to terminate this Agreement and all amendments and supplements thereto.

## V.

### STATUS OF U.S. ARMY PERSONNEL

A. It is understood and agreed that U.S. Army personnel shall perform their training at Ben Taub General Hospital under authority of lawful orders issued by the Department of the Army and shall receive their pay and allowances therefrom. Accordingly, while performing services at Ben Taub General Hospital, U.S. Army personnel are acting within the scope of their employment and are considered employees of the Army acting within the scope of their employment under federal law. The provisions of 10 United States Code 1089, will immunize U.S. Army personnel from individual tort liability. Furthermore, it is understood that the U.S. Army will protect the liability of U.S. Army personnel only, and that the U.S. Army may, in its representation of U.S. Army personnel assert any defense available under federal law. Any notification of actual or potential claims or suits against the District which names a military person as a party or potential defendant will be reported to the United States Army Claims Service, Fort George G. Meade, Maryland, 20755 (telephone: 301-677-7009). The District agrees to cooperate fully with U.S. Army in the investigation of such complaints, to include making available any medical records, medical material including radiographs, slides, tissue, and witness statements, and the names of all other defendants.

B. The U.S. Army shall cooperate with District and Baylor in the investigation and defense of such complaints and upon request of the military health provider, assist in the removal of the action to the appropriate Federal District Court with a view toward substituting the United States as a defendant in lieu of the military health care provider.

C. The U.S. Army nurses will perform assigned clinical duties throughout the duty day which will include patient care activities, in-services, conferences and/or staff call as required by the U.S. Army's training schedule. The District will provide the same facilities, including cafeteria, lounge areas and lockers, if any, as are provided to its nurse employees.

The nurses will conform to the District's policies relating to breaks, lunch hours and lounge areas. The nurses will be appropriately attired in duty uniform and be identified by name plates and insignia of rank or grade.

D. The U.S. Army will provide the District with anticipated hours of duty for assigned U.S. Army personnel. The U.S. Army will notify the District regarding changes in the scheduling of the nurses assigned to the District so that suitable adjustments can be made at the District.

## VI.

### ADMINISTRATIVE POLICIES AND PROCEDURES

A. The Chief Administrator of the Harris County Hospital District or her designate and the Chief of Staff for Ben Taub General Hospital shall be responsible for the overall surveillance of the activities under this Agreement in order to determine whether services by U.S. Army personnel are being performed to the satisfaction of the District, and in compliance with administrative policies established for the operation of the District's facilities.

B. The U.S. Army shall establish administrative policies for the activities set forth in this Agreement which are consistent with the policies of the District. All U.S. Army personnel will be under official orders assigning them to duty at Ben Taub General Hospital for a specified period of time. All U.S. Army medical personnel so assigned will first report to the appropriate authority at Ben Taub General Hospital for appropriate instructions. While at Ben Taub General Hospital, the U.S. Army medical personnel will perform medical services in consultation with Baylor medical personnel. Such U.S. Army medical personnel will be subject to, and be required to, abide by all rules and applicable regulations, except where compliance would be in violation of federal statute or army regulations.

C. The Administrator of Ben Taub General Hospital shall have the right under this Agreement at any time to declare any U.S. Army medical personnel to be Persona Non Grata and may demand of the U.S. Army that such person be removed from the District's facilities. The U.S. Army shall be required as part of this Agreement to forthwith remove any such U.S. Army medical personnel so declared to be Persona Non Grata.

D. It is expressly understood and agreed that the District will generate bills for medical services rendered by U.S. Army medical personnel. All proceeds from these bills shall become the exclusive property of the District and the U.S. Army shall have no right or claim to such proceeds.

## VII.

### CONSULTATION BETWEEN PARTIES

A committee to be known as the "Joint Consultation Committee" shall be established in furtherance of this Agreement. The Committee shall consist of an equal number of representatives from the District and the U.S. Army and shall have meetings whenever necessary or appropriate for (a) the establishing of procedures necessary to implement this Agreement, (b) the resolution of any problems which may arise between the District and the U.S. Army, and (c) educational purposes so that the members of this Committee will be as conversant as possible with all of the joint operations of the District and the U.S. Army and with the problems incident to the implementation of this Agreement. However, as provided in paragraph II above, the Board of Managers of the District retains final jurisdiction over all matters occurring within any or all facilities of the District.

## VIII.

### RESEARCH OR PILOT STUDIES

The District and the U.S. Army agree that all proposals for research or pilot studies in which it is anticipated that the U.S. Army medical personnel will participate shall be approved by both the District and the U.S. Army. It is further understood and agreed that the U.S. Army will prohibit its U.S. Army medical personnel from publishing any materials, developed as a result of their clinical training at Ben Taub General Hospital that has not been previously approved, in writing by the Administrator of Ben Taub General Hospital. Nothing contained herein shall prohibit the U.S. Army from publishing or using any materials developed as a result of their clinical training at Ben Taub General Hospital for their own internal use.

## IX.

### TERM

This Agreement shall become effective upon execution by all parties and approval by the Harris County Commissioners Court and shall continue until completion of the FST's one month assignment at Ben Taub General Hospital. This Agreement may be terminated at any time, with or without cause, by giving thirty (30) days prior written notice to all parties. It is expressly understood and agreed, however, that the U.S. Army will have the right to terminate this Agreement without such required notice at any time, if determined necessary, in the interests of military mission requirements.

X.

PROVISION FOR OTHER AGREEMENTS

It is recognized that either party may enter into other agreements and affiliations so long as same are not inconsistent with the terms and provisions hereof.

XI.

CHANGE OR MODIFICATION

Unless otherwise provided, this Agreement shall be subject to change or modification only by written agreement signed by representatives of the parties pursuant to authorization of their respective governing bodies.

XII.

BINDING ON SUCCESSORS

This Agreement shall bind and benefit the respective parties and their legal successors, but shall not otherwise be assignable in whole or in part, by any party without first obtaining written consent of the other parties.

XIII.

LEGALITY

This Agreement shall be subject to all present and future valid laws, orders, rules and regulations of the United States of America, the State of Texas, and of any regulatory body thereof having jurisdiction.

#### XIV.

#### NOTICE

Unless otherwise provided in this Agreement, any notice, communication, request, reply or advice (herein severally and collectively for convenience called "Notice") herein provided or permitted to be given, made or accepted by either party to the other must be in writing and may be given or served by depositing the same in the United States mail postpaid, registered or certified mail, addressed to the party to be notified, with return to such party, or by prepaid telegram, when appropriate, addressed to the party to be notified. Notice deposited in the mail in the manner hereinbefore described shall be conclusively deemed to be received and effective, unless otherwise stated, three (3) days after it is so deposited. Notice given in any other manner shall be effective only if and when received by the party to be notified. For the purposes of notice, the addresses of the parties shall, until changed as hereinafter provided, be as follows:

U.S. ARMY:

Great Plains Regional Medical Command  
Fort Sam Houston, Texas 78234-6200  
Attention: Commander

DISTRICT:

Harris County Hospital District  
P. O. Box 66769  
Houston, Texas 77266-6769  
Attention: President & CEO

BAYLOR:

Baylor College of Medicine  
One Baylor Plaza  
Houston, Texas 77030  
Attention: President

The parties shall have the right to specify as their addresses any other address by giving at least fifteen (15) days written notice of the change in address to the other party.

IN TESTIMONY OF WHICH this Agreement in duplicate originals, both of equal force, has been executed on behalf of the parties hereto as follows, to-wit:

(a) It has on the \_\_\_\_ day of \_\_\_\_\_, 1998, been executed on behalf of the Harris County Hospital District by the Chairman of the Board of Managers, pursuant to the order of the Board of Managers, so authorizing; and

(b) It has on the \_\_\_\_ day of \_\_\_\_\_, 1998 been executed on behalf of the Great Plains Army Medical Command Fort Sam Houston, Texas, by \_\_\_\_\_, who is authorized to execute this Agreement by an Order of the United States Government for and on behalf of the United States Army.

HARRIS COUNTY HOSPITAL  
ON DISTRICT  
REGIONAL  
COMMAND

THE UNITED STATES OF AMERICA  
BEHALF OF GREAT PLAINS  
ARMY MEDICAL

By \_\_\_\_\_  
Chairman, Board of Managers

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: Commander, Great Plains Regional  
Medical Command

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: Contracting Officer

APPROVED AS TO FORM:

MICHAEL P. FLEMING  
County Attorney

By: \_\_\_\_\_  
Mercedes Leal  
Assistant County Attorney

BAYLOR COLLEGE OF MEDICINE

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title : \_\_\_\_\_



**CONTROLLER'S CERTIFICATE**

I certify that funds are available in the amount of \$8,000.00 to accomplish and pay the obligations of the Harris County Hospital District under the foregoing Agreement.

\_\_\_\_\_  
Controller, Harris County Hospital District

ORDER AUTHORIZING APPROVAL OF AGREEMENT BETWEEN  
HARRIS COUNTY HOSPITAL DISTRICT, UNITED STATES GOVERNMENT ON  
BEHALF OF GREAT PLAINS ARMY MEDICAL COMMAND FORT SAM HOUSTON,  
TEXAS, AND BAYLOR COLLEGE OF MEDICINE

THE STATE OF TEXAS     §  
                                     §  
COUNTY OF HARRIS     §

On this the \_\_\_\_ day of \_\_\_\_\_, 1998, the Commissioners Court  
of Harris County, Texas, sitting as the governing body of Harris County, upon motion of  
Commissioner \_\_\_\_\_, seconded by Commissioner  
\_\_\_\_\_, duly put and carried.

IT IS ORDERED that Commissioners Court hereby approve an Agreement Between  
Harris County Hospital District, United States Government on behalf of Great Plains Army  
Medical Command Fort Sam Houston, Texas, and Baylor College of Medicine, involving  
medical services to be provided by U.S. Army medical personnel at Ben Taub General  
Hospital, under the terms and conditions provided for in said contract, said contract being  
incorporated hereby by reference and made a part hereof for all intents and purposes as though  
fully set forth herein word for word.

## TRAINING PLAN

### COMBAT TRAUMA SURGICAL TRAINING (CTST) of a FORWARD SURGICAL TEAM (FST)

#### The Ben Taub Pilot Project (September 1998)

#### 1. Training Instrument (Mission Essential Task List Analysis):

ARTEP 8-518-10-MTP is the Army's training manual for Forward Surgical Teams (FSTs). According to the manual: "The most important training in peacetime is unit training. It prepares a unit to accomplish its critical mission...to provide forward surgical support to supported forces". The Mission Essential Task List (see FM 25 -100/101 for explanation of the METL process) of the FST is:

- Conduct Strategic Deployment
- Relocate Unit to a New Operating Site
- Establish Area of Operations
- Perform Combat Health Support Operations
- Defend Assigned Area
- Conduct Strategic Redeployment

The only clinical METL task for the FST is to Perform Combat Health Support Operations. By FM 8-10-25 doctrine, the clinical main effort of the FST, in its critical mission, is to provide surgical care for casualties with life and limb threatening injuries. FST doctrine extracted 56 patient conditions from the Department of Defense (DOD) Deployable Medical Systems' clinical database that were identified as most suitable (i.e., life and limb threatening injuries) for treatment at the FST. These 56 patient conditions are listed in Appendix A ("ICD-9 Coding of FST Patient Conditions"). Also listed is a cross-referenced list of comparable current civilian codes for diagnostic classification, the International Classification of Diseases (ICD-9).

In the Mission Training Plan (MTP) for FSTs (ARTEP 8-518-10-MTP), there are ten collective tasks that must be performed under the Battle Operating System of Combat Service Support. Of the ten Combat Service Support tasks, four are surgical collective tasks. They are:

- Treat Unit Casualties
- Provide Pre-Operative Services
- Perform Surgical Services
- Provide Post-Operative Services

For every surgical collective task listed above, each FST health care provider has individual tasks they need to perform for team success in its surgical collective tasks. The individual tasks and scope of practice for each provider is different, based on their clinical specialty, as designated in the Army by a Military Occupational Specialty (MOS). The training standards for individual tasks per MOS are listed in Army Soldier Training Publications.

The FST is composed of twenty personnel distributed in the following ten MOS areas:

- (3) 61J00 General Surgeons
- (1) 61MOO Orthopedic Surgeon
- (2) 66FOO Nurse Anesthetists
- (1) 66H8A Critical Care Nurse
- (1) 66EOO Operating Room (OR) Nurse
- (1) 66HOO Emergency Room (ER) Nurse
- (3) 91C Licensed Vocational Nurses (LVNs)
- (3) 91D OR Technicians
- (4) 91B Emergency Medical Technicians (EMT's)
- (1) 70B67 Field Medical Assistant (MSC Administrator)

In the MTP, the FST is provided with a Situational Training Exercise (STX 8-2-E0004) to train to the standard (in its individual and collective tasks) necessary to perform its Perform Combat Health Support Operations METL task. There are 22 collective tasks (distributed among the various Battle Operating Systems) which need to be performed to complete this STX. However, of the STX's 22 collective tasks, there are only four surgical collective tasks, they are:

- Treat Unit Casualties
- Provide Pre-Operative Services
- Perform Surgical Services
- Provide Post-Operative Services

The MTP established the Army's training standards for the individual, collective, and unit tasks necessary to accomplish its critical surgical mission. Those training standards may not be lowered. However, the training standards may be raised. The purpose of this training plan for CTST of a FST is to raise the training standards for the unit's four surgical collective tasks, as listed above. As noted in the MTP: "The commander should seek optimal, not adequate performance, for his unit's training".

The Ben Taub pilot study is simply a surgically focused STX, conducted by a FST, at a civilian trauma center. This STX will serve as the training instrument for the CTST of a FST.

In order to achieve higher training standards in its critical surgical mission, the STX must remain extremely focused. The STX will train only on the above four surgical collective tasks, limited to the treatment of conventional wounds. In addition, the CTST training will specifically target care of civilian trauma victims whose injuries are comparable and suited for care at the FST (as cross-referenced in Appendix A).

The individual supporting soldier clinical tasks that have to be performed to accomplish the four surgical collective tasks are listed in Appendix B ("Supporting Soldier and Collective Tasks per MOS"). For CTST purposes, specific clinical supporting soldier tasks unique to FST equipment (e.g., use of the McVicker operating room table) are not listed. It is presumed that FST personnel will train separately with their FST equipment. Furthermore, clinical trauma skills which are unique to high technology equipment, not available at the FST (e.g., interpret computerized tomography scan), are not listed. It is understood that an FST surgeon undergoing CTST training at a Level I trauma center will need to interpret computerized tomography (CT)

scans on trauma victims. Training in that skill may very well prepare the surgeon to provide surgical care at echelons above the FST. However, since the FST does not have CT capability, the interpretation of CT scans cannot be considered a surgical supporting soldier skill required for FST mission accomplishment.

In the event of a mass casualty event, any section of the FST (triage, surgery, or recovery) could potentially be overwhelmed with casualties. For this reason, extensive cross training of the FST personnel is necessary to allow the FST commander the ability to cross level his personnel (to maximize his surgical power on the decisive point of FST mass casualty operations). The individual supporting soldier tasks listed in Appendix B account for the MOS skills listed in standard Soldier Training Publications (STPs) but, in addition, include those training skills necessary to raise the FST's surgical training standards.

## 2. Training Objectives

CTST will provide a military training benefit only if its completion results in an FST capable of performing its critical mission (provide forward surgical support) **while obtaining optimal combat casualty care results**. It is understood that the FST will experience significant operational, logistical and environmental challenges that do not occur at a Level I trauma center. However, the FST will still be able to obtain "optimal" (defined as best achievable clinical results considering the battlefield environment) combat casualty results if its surgical readiness is maximized. It is presumed the FST's surgical readiness will be maximized if the following CTST training objectives are met at Ben Taub General Hospital (BTGH):

A. The FST providers have conducted adequate individual skills trauma training in their supporting soldier tasks.

B. The FST has conducted adequate team training in its surgical collective tasks.

C. The FST has conducted adequate unit training in its Perform Combat Support Operations Surgical Care METL task.

D. The FST has demonstrated the ability to obtain quality trauma outcomes (which meet national trauma care standards) using BTGH trauma protocols to care for civilian trauma victims.

E. The FST has identified those BTGH trauma protocols which will have to be modified for an FST environment to obtain optimal combat casualty results.

F. The FST is confident of its modified approach towards combat casualty care and that its level of CTST will allow them to obtain optimal combat casualty results.

## 3. Training Duties and Responsibilities:

For the purposes of the CTST pilot, two Observer Controllers (OC) of training will accompany the FST to BTGH.

### a. OC and Officer in Charge of CTST Pilot

1) Ensure data is collected to measure training benefit of CTST

2) Perform a cost/benefit analysis of CTST for the GPRMC

3) Perform Officer in Charge functions for physicians and MSC.

- b. OC and Officer in Charge of Nursing personnel
  - 1) Ensure nursing data is collected to measure training benefit of CTST
  - 2) Perform a cost/benefit analysis of CTST for the GPRMC
  - 3) Perform Officer in Charge functions for nursing personnel.
- c. FST (nineteen) Health Care Providers:
  - 1) Perform assigned BTGH clinical duties to obtain trauma training
  - 2) Comply with BTGH supervisors and protocols
  - 3) Report immediately to OCs any problems with BTGH personnel or patients
  - 4) Provide FST OCs with required CTST data
  - 5) Provide feedback and input to FST OCs on how to improve CTST
- d. FST (one) Administration Officer
  - 1) Assist OCs and FST commander with administrative duties
  - 2) Ensure data is collected to measure training benefit of CTST
  - 3) Perform a cost/benefit analysis of CTST for GPRMC

#### 4. CTST Timeline and Events:

31 Aug 98: Report to BTGH.

01 – 05 Sept 98: Orientation and Individual Training

06 Sept 98: Administration Time (In Progress Review)

07 – 20 Sept 98: Team Training and Cross-Training

21 – 22 Sept 98: Administration Time (In Progress Review)

23 – 28 Sept 98: Collective and Unit Training

29 Sept 98: Administration Time (FST After Action Review)

30 Sept 98: Administration Time (BTGH After Action Review) / CTST completed

#### 5. CTST Phases:

##### 01 – 05 Sept 98: Orientation and Individual Training

The providers will report to their assigned BTGH supervisors for orientation to the facility, job duties, procedures, and protocols. The three General Surgeons will each be assigned to an inpatient surgery team. The Orthopedic Surgeon will be assigned to an inpatient orthopedic team. The Nurse Anesthetists will be assigned to the Department of Anesthesia. The remaining nursing personnel will be assigned to the Department of Nursing. Each provider will perform clinical duties (within their MOS specialty) in their assigned BTGH duty section (e.g., the 91B

EMTs will work in the emergency center, the 66H8A Critical Care Nurse will work in the intensive care unit). Physicians will work the times and hours required of their team, with inpatient call every third day. Nursing personnel will work five consecutive 12 hour shifts. In addition to individual trauma skills training under their BTGH supervisors, the providers will conduct surgical collective task training as members of BTGH teams. By working within BTGH teams, the providers will assimilate BTGH procedures and trauma protocols.

#### 07 - 20 Sept 98: Team Training and Cross Training

All providers will continue their individual training in their BTGH duties. However, the FST providers will transition from working as individuals within established BTGH teams to working as Army trauma teams, under BTGH supervisors' monitoring and guidance. In short, the FST personnel working in the EC, OR, and ICU will work together to conduct their surgical collective tasks, as a coherent team. The OCs will monitor and ensure that each provider receives trauma training in their surgical supporting soldier tasks. In addition, cross training of FST personnel will be implemented.

The General Surgeons will ensure they maximize their cross training opportunities in the neurosurgery, maxillofacial, urology, and orthopedic surgery procedures required for their supporting soldier surgery skills. In addition, the General Surgeons will function as resuscitation team trainers of FST personnel in their required resuscitation cross training skills.

The Orthopedic Surgeon will conduct cross training by assisting the General Surgeons on laparotomies and vascular repairs. He will function as the orthopedic team trainer of the FST personnel in their required orthopedic cross training skills.

The nursing personnel will continue to work 60 hour duty weeks on twelve hour shifts. However, one or two shifts per week will consist of cross training. The Nurse Anesthetists will receive cross training in EC resuscitations while directly supervised by FST surgeons. The OR and ICU nursing personnel will receive cross training as resuscitation team members. The EMTs will receive cross training in the ICU and will train with the Houston Emergency Medical Services (EMS) in pre-hospital stabilization and transport.

It should be noted that the collective task of Provide Preoperative Services (i.e., triage and resuscitation) is considered most vulnerable to a FST mass casualty overload. Therefore, the CTST cross training particularly emphasizes that collective task conducted within the BTGH emergency center.

It is understood that the first surgical collective task of the FST is to Treat Unit Casualties. This collective task addresses the possibility that while the FST is erecting its facility (i.e., conducting its Establish Unit Area of Operations METL task), combat casualties may present requiring "tailgate" resuscitation. The individual surgical skills required to accomplish this collective task are those possessed by 91B EMTs. It was elected for this STX to limit pre-hospital stabilization and transport training solely to the 91B EMTs. This will maximize the individual training of the 91B EMTs in their Treat Unit Casualties collective task. The remaining FST personnel will maximize their CTST on the three remaining surgical collective tasks.

## 23 – 28 Sept 98: Collective and Unit Training

The culminating CTST event will occur in the last week of the STX. For six consecutive 12 hour night shifts, every member of the FST will be conducting simultaneous collective and unit training (using BTGH trauma protocols and under BTGH supervision). Major trauma (particularly penetrating trauma) cases will be preferentially shunted to the FST personnel. The patients will be cared for in a linear fashion similar to how the FST will process combat casualties.

Two 91B EMTs will be stationed with the Houston EMS system to respond to major trauma calls. The EMTs will conduct pre-hospital stabilization and transport care and join an Army resuscitation team in the BTGH emergency center to resuscitate the patient.

Two Army resuscitation teams will be on duty in the EC. An (EC stationed) 61J General Surgeon will supervise the two teams. One team will consist of a 66H ER Nurse, a 91B EMT, and a 91C LVN. The second team will consist of a 66F Nurse Anesthetist, a 91B EMT, and a 91D OR Technician. The Orthopedic Surgeon will be available to provide EC resuscitation assistance and orthopedic care to the FST trauma patients.

Patients that require operative intervention will be shunted to the 61J General Surgeon on inpatient call for that day. The patient will be preferentially taken to an OR room staffed by FST personnel (to include the remaining Nurse Anesthetist, the 66E OR Nurse, and the two remaining 91D OR Technicians).

Post-operative patients will be preferentially shunted to an Army Critical Care team for recovery and ICU monitoring. The Critical Care Team will consist of the 66H8A Critical Care Nurse and the two remaining 91C LVNs.

The General Surgeons will continue their inpatient call every third night with their BTGH team. The remaining two General Surgeons will ensure that one of the two non-call surgeons is in-house during each twelve hour night shift that the entire FST conducts training. The third General surgeon will be on back-up call. The Orthopedic Surgeon will discontinue his orthopedic team call and will simply work six consecutive twelve hour shifts with the rest of the FST.

Cross leveling of resuscitation personnel will be conducted to support the surgical and recovery/intensive care collective operations of the FST, as necessary.

## 6 & 21 – 22 & 29 – 30 Sept 98: Administrative Time

The Ben Taub pilot study of FST level CTST is exactly that... a pilot study. The scheduled days of administrative time (surgeons will continue their inpatient team duties during scheduled administrative days) are for the OCs to receive data and feedback from the provider personnel undergoing the training. Problems and training opportunities will arise that will require adjustment of the training plan. That is to be expected. At the end of the CTST, it is essential that formal in-depth After Action Reviews be conducted to capture lessons learned and insights into means to improve CTST for future rotations.

### 6. Training Metrics:

To determine whether the training objectives were met, the pilot established what data (training metrics) it was going to collect to measure the accomplishment of each training



objective. It established training tools to collect this data. Then it identified the training standards it would use to compare the accomplishment of the training objectives to.

A. The providers have conducted adequate individual trauma skills training in their surgical supporting soldier tasks.

The GAO concluded civilian Level I trauma centers, to include BTGH, treated adequate numbers of civilian trauma victims with injuries comparable to conventional combat casualties to serve as sites for CTST. The FST members will, therefore, train on their surgical supporting soldiers tasks while performing hands-on patient care at BTGH.

Appendix B: "Supporting Soldier and Collective Tasks per MOS" was specifically developed to document the completion of the FST provider's surgical supporting soldier tasks. Each provider will be issued a copy (case log) of their supporting soldier tasks list. The providers will track on a daily basis the number of iterations they completed for each supporting soldier task, while providing hands-on patient care at BTGH. This data will be collected on a daily basis and compiled at the end of the pilot.

The quantitative metrics measured are the number of supporting soldier tasks completed. The training tools used are case logs of tasks performed. However, the training standards to compare to are limited.

The only Army validated individual soldier supporting tasks listed in Appendix B are ARTEP (from ARTEP 8-518-10-MTP) noted tasks listed for the enlisted specialties (91B, 91C, 91D). There are no ARTEP validated individual soldier supporting tasks for the other specialties.

However, for the General Surgeons two external trauma training standards exist. The Combat Trauma Surgical Committee established that each General Surgeon is to "manage" at least twenty trauma patients during their CTST. And the Residency Review Committee established that each General Surgeon is to operate on at least sixteen trauma index cases during the course of a General Surgery residency.

Of course the mere performance of clinical supporting soldier tasks by FST providers does not ensure proficiency, nor speak to the quality of care rendered. The process of completing the task must be done efficiently, in a timely manner, and under appropriate circumstances (judgement must be evaluated). In order to ensure the quality of tasks performed meets BTGH standards, the process of care rendered by each provider will be evaluated daily by EMS or BTGH supervisors and monitored by the FST training OCs. For the nursing personnel, daily critique of their clinical performance in soldier supporting skills will be provided at the end of their work shift. The physicians will receive the same critique daily in the form of a typical (surgery service) morning report format. In addition, on a weekly basis all significant clinical interventions by each inpatient surgical team (to include the FST surgeons) will be reviewed in a formal BTGH Morbidity and Mortality conference. Significant clinical interventions will include: EC resuscitation procedures (i.e., arteriograms, diagnostic peritoneal lavage, ultrasound, chest tube thoracostomy, etc...), major operative cases, and admissions of critically injured patients to the ICU. Any patient complications involving an FST provider will engender a specific case review to assess the quality of care rendered (and need for additional supporting soldier skill training). At the conclusion of the pilot, formal written evaluations of each provider's performance in their supporting soldier tasks will be completed. These evaluations

will use input from ongoing OC monitoring and summary evaluations from their BTGH supervisors.

The qualitative metrics measured are the supporting soldier tasks completed competently. The training tools used are a variety of critiques. The standards used are those provided by OC and BTGH experts.

B. The FST has conducted adequate team training in its surgical collective tasks.

During the weeks of individual training, daily feedback as to how the FST provider functioned within the BTGH team providing a collective task (Provide Pre-Operative Services, Provide Surgical Services, or Provide Post-Operative Services) will be part of the daily critique evaluations (as noted above).

During the final six days of unit-level CTST, team training of the FST in its collective tasks will be monitored and evaluated. To maximize the training opportunities, major trauma cases will be preferentially shunted to the FST. Each morning all FST providers, as a team, will undergo an extensive after action review (AAR) of each major trauma case the FST cared for during the previous night.

To ensure the FST followed BTGH trauma protocols, the BTGH supervisors will review and critique the process of care provided by the FST teams. For the Provide Pre-Operative Services collective task, videotape replays of the EC resuscitations will be reviewed by the team members and critiqued. BTGH and OC evaluators will assess the overall collective task performance of the FST during the AAR sessions.

The qualitative metrics measured are the collective tasks completed competently. The training tool used is the AAR. The standards used are those provided by the BTGH (surgeon and nursing) trauma experts.

The American College of Surgeons (see "Resources for the Optimal Care of the Injured Patient") has established standardized continuous quality audit filters to monitor the process of trauma care. These audit filters are collected by the BTGH trauma registry and will be used to verify the collective tasks performed by the FST met quality standards. For example, one audit filter is for: Patients with abdominal injuries and hypotension (systolic blood pressure < 90mm Hg) who do not undergo laparotomy within one hour of arrival in the emergency department. If a trauma patient the FST cared for did not meet that standard, an in-depth analysis of the team's efficiency will be performed to identify why the standard was not met.

The quantitative metrics measured are the number of quality audit filters met. The training tool used is the BTGH trauma registry. The standards are those provided by the American College of Surgeons.

C. The FST has conducted adequate unit training in its Perform Combat Support Operations METL task.

By doctrine, the FST is to provide forward surgical support for up to 72 consecutive hours and treat up to ten critically injured patients per day. For medical-legal purposes this intensity of training cannot be performed at BTGH. However, the entire FST will work as a team, during the final week of CTST (six consecutive days of 12 hour shifts), to approximate its FST mission. It is anticipated that the FST will treat five major trauma or emergency cases per day during its CTST team training to once again approximate its FST surgical support mission.

The quantitative metrics measured are the number of critically injured patients the FST treated during 72 hours of unit training. The training tools used are case logs. The standards are established by FM 8-10-25 doctrine.

The number of trauma patient treated (by the unit over the course of the pilot), with ICD-9 diagnoses consistent with the FST doctrinally limited 56 patient casualty conditions, will be documented (using the BTGH trauma registry). These ICD-9 codes are listed in the "ICD-9 Coding of FST Patient Conditions" spreadsheet in Appendix A. These ICD-9 codes can then be compared to the "Comprehensive listing of single organ injuries of FST Patient Conditions" spreadsheet listed in Appendix C. This spreadsheet lists the 35 single organ injuries that in various combinations compose all 56 FST patient conditions established by doctrine.

The quantitative metrics measured are the number of doctrinally appropriate single organ injuries treated. The training tools used are case logs. The standards are established by FM 8-10-25 doctrine.

D. The FST has demonstrated the ability to obtain quality trauma outcomes (which meet national trauma care standards) using BTGH trauma protocols to care for civilian trauma victims.

National trauma outcome (survival) norms using the TRISS methodology (see "Resources for the Optimal Care of the Injured Patient") have been calculated for injured patients. The patient outcomes of every trauma patient treated by the unit's three General Surgeons can be documented using the BTGH trauma registry. The ability of the FST surgeons (an outcomes measured performance) to achieve trauma center care survival outcomes, which meet national standards, will be determined for internal review purposes.

To achieve statistical significance using the TRISS methodology, over 100 trauma patients need to be treated and compared to national standards. It is not anticipated that the FST General Surgeons will care for that volume of trauma patients over one month. However, non-statistical quantitative outcome assessments can be made by documenting if any patients with predicted survivals of greater than 50%, expired.

The quantitative metric measured is the mortality among patients with predicted survivals greater than 50%. The training tool used is the BTGH trauma registry. The TRISS standards are provided by the American College of Surgeons.

E. The FST has identified those BTGH trauma protocols which will have to be modified for an FST environment to obtain optimal combat casualty results (best achievable outcome considering the operational, environmental, and logistical limitations of the FST).

If CTST prepares the FST to provide optimal trauma care at a civilian trauma center but does not prepare the FST to provide optimal combat casualty care, CTST does not improve FST surgical readiness. The function of the training OCs is to provide guidance during the (final week) case review sessions which allows the FST to determine how its BTGH protocols will have to be modified for the battlefield. In this way, the military relevancy of CTST will be established.

The qualitative metrics measured are the BTGH trauma protocols which have to be modified for battlefield success. The training tool used is the AAR. The standards are those provided by the military trauma experts.

F. The FST is confident of its modified approach towards combat casualty care and that its level of CTST will allow them to obtain optimal combat casualty results.

Survey tools will be utilized that each FST member will complete at the beginning and end of CTST. The surveys will document (on a five point Lickert scale ranging from strongly agree to strongly disagree) the confidence of the team members in their ability to perform the individual, collective, and unit tasks necessary for their critical surgical mission accomplishment. Any changes in the FST's degree of confidence to accomplish its mission (due to the pilot training) can be statistically analyzed.

The quantitative metric measured is the FST's change in confidence to accomplish its mission. The training tool used is a general expectation of success style self assessment. The standards are obtained through statistical analysis of the respondents self assessment.

#### 7. Training Plan:

The CTST, provided by the Ben Taub pilot, is a surgical STX conducted for an FST to train to the highest trauma standards in its critical mission (to Provide Forward Surgical Support). The STX is the training instrument being used to develop and evaluate CTST for an FST. The STX training objectives and metrics to document their accomplishment have been previously listed in this training plan.

The FST should be considered a surgical combined arms team of twenty personnel with eight MOS clinical specialty areas. To maximize the combat surgical power of the FST, the unit must integrate and synchronize its trauma care of combat casualties. The main effort of the FST is to care for those combat casualties with life and limb threatening injuries. In the event of a mass combat casualty event, the decisive point for FST operational success may occur in any of the four surgical collective task areas (i.e., Treat Unit Casualties, Provide Pre-Operative Services, Provide Surgical Services, and Provide Post-operative Services). In order for the FST to concentrate its surgical power at the decisive point of FST operations, the combined team must be extensively cross-trained. In this way, the FST may cross level its personnel resources to control the decisive point on the FST battlefield, sustain its main effort, and achieve FST operational success.

The BTGH surgical STX will provide METL-directed FST individual, collective, and unit level training (as a surgical combined arms team). The STX will concentrate on CTST directed at the FST's main effort. The cross training necessary for cross leveling of personnel (at the decisive point of future FST combat operations) will also be conducted during the STX.

APPENDIX A  
ICD-9 CODING OF FST PATIENT CONDITIONS

Number	FST Patient Condition #	ICD-9 Code	Description of Patient Condition
1	5	803.16 852.46	Cerebral contusion (closed) with intracranial hematoma, with or without nondepressed linear skull fracture—severe, large hematoma (including epidural hematoma) with rapid deterioration of comatose patient.
2	7	803.36	Cerebral contusion (closed) with depressed skull fracture, severe, with associated intracerebral hematoma and / or massive depression.
3	17	802.9 879.8	Wound (open), face, jaws, and neck lacerated with associated fractures (excluding spinal fractures). Severe, with airway obstruction.
4	19	873.5 874.9 900.9	Wound (open), face and neck lacerated contused without fractures. Severe, with airway obstruction.
5	45	880.19 903.9 955.9	Wound, upper arm, open, penetrating, lacerated without fracture, severe with nerve and / or vascular injury.
6	71	887.20	Amputation, full arm, traumatic—complete, all cases.
7	88	807.11 860.5	Wound (open), thorax (anterior or posterior), penetrating with associated rib fracture and pneumohemothorax, moderate respiratory distress.
8	98	864.04	Wound (closed), liver acute (crush, fracture) —major liver damage.
9	99	864.02	Wound (closed), liver acute (crush, fracture) —minor liver damage.
10	100	865.03	Wound (closed), spleen acute (crush, fracture) — all cases.
11	101	863.50	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound to large bowel.
12	102	863.30	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound to small bowel without major or multiple resuscitation.
13	103	864.14	Wound (open), abdominal cavity with penetrating, perforating wound of liver—major damage.
14	104	864.13	Wound (open), abdominal cavity with penetrating perforating wound with lacerated liver.
15	105	865.14	Wound (open), abdominal cavity with penetrating, perforating wound— spleen. Severe, all cases.
16	106	866.13	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with shattered kidney.
17	107	866.12	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with lacerated kidney, initially repaired, but subsequent nephrectomy.
18	108	867.10	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with shattered bladder.
19	109	867.10	Wound (open) abdominal cavity with lacerated, penetrating, perforating wound with lacerated bladder.
20	114	808.53 879.2	Wound (open), abdomen with pelvic fracture and penetrating, perforating wounds to multiple pelvic structures (male or female).
21	115	808.9 863.5	Wound (open), abdomen with pelvic fracture and penetrating, perforating wounds to pelvic colon only (male or female).

APPENDIX A  
ICD-9 CODING OF FST PATIENT CONDITIONS

Number	FST Patient Condition #	ICD-9 Code	Description of Patient Condition
22	124	821.1 956.9 904.8	Wound (open), thigh lacerated, penetrating, perforating with fracture and nerve/vascular injury—limb salvageable.
23	131	823.92 956.9 904.8	Wound (open), lower leg with lacerated, penetrating, perforating with fracture and nerve and/or vascular injury—limb salvageable.
24	137	824.9 825.3 826.1 959.1	Wound (open), ankle, foot, toes with penetrating/perforating with fractures and nerve and/or vascular injury—limb salvageable.
25	138	928.90	Crush injury, lower extremity—limb not salvageable.
26	139	928.90	Crush injury, lower extremity—limb salvageable.
27	146	897.20	Amputation above knee, traumatic, complete, requiring hip disarticulation.
28	147	897.20	Amputation above the knee, traumatic, complete.
29	159	853.1 860.1	Multiple injury wound (MIW) of brain and chest with sucking chest wound and pneumothorax.
30	160	853.10 863.5	MIW of brain and abdomen with penetrating, perforating wound—colon.
31	161	853.10 866.12	MIW of brain and abdomen with penetrating, perforating wound—kidney involvement.
32	162	853.10 867.10	MIW of brain and abdomen with penetrating, perforating wound—bladder involvement.
33	163	853.1 865.13	MIW of brain and abdomen with shock and penetrating, perforating wound— spleen involvement.
34	164	853.1 864.14	MIW of brain and abdomen with shock and penetrating, perforating wound— liver.
35	165	853.10 897.6	MIW of brain and lower limbs requiring bilateral above-knee amputations.
36	166	860.40 863.50	MIW of chest with pneumothorax and abdomen with penetrating wound—colon.
37	167	860.40 866.12	MIW of chest with pneumothorax and abdomen with penetrating, / perforating wound—kidney.
38	168	860.40 867.10	MIW of chest with pneumothorax and abdomen with perforating wound—bladder.
39	169	860.40 865.13	MIW of chest with pneumothorax and abdomen with penetrating, perforating wound—spleen.
40	170	860.4 864.14	MIW of chest with pneumothorax and abdomen with penetrating, perforating wound—liver.
41	171	860.4 821.00 879.8 904.00	MIW of chest (with pneumothorax and limbs with fracture and vascular injury).
42	172	863.5 867.10	MIW of abdomen with penetrating, perforating wound of colon and bladder.
43	173	863.50 865.13	MIW of abdomen with penetrating, perforating wound of colon and spleen.

APPENDIX A  
ICD-9 CODING OF FST PATIENT CONDITIONS

Number	FST Patient Condition #	ICD-9 Code	Description of Patient Condition
44	174	863.5 865.13	MIW of abdomen with penetrating, perforating wound of colon and liver.
45	175	863.50 821.10 956.90	MIW of abdomen and limbs with penetrating, perforating wound of colon and open fracture and neurovascular wound of salvageable lower limb.
46	176	864.14 866.12 890.00	MIW of abdomen and pelvis with penetrating, perforating wound of liver and kidney.
47	177	865.13 867.10	MIW of abdomen and pelvis with penetrating, perforating wound of spleen and bladder.
48	178	866.12 828.10 957.80	MIW of abdomen, pelvis, limbs with fracture and neurovascular injury, limb salvageable, and penetrating wound—kidney.
49	179	867.10 879.80	MIW of abdomen, pelvis, limbs without fracture or neurovascular injury, and penetrating perforating wound—bladder.
50	180	827.10 865.13 948.22 957.80	MIW of abdomen and lower limbs with fracture and nerve injury with penetrating wound of spleen with full thickness burns to greater than 20% of total body surface area.
51	181	864.14 879.80	MIW of abdomen and limbs without fracture or nerve injury to limbs, with penetrating wound of liver.
52	182	860.50 851.30 879.80	MIW, chest, with pneumothorax, soft tissue injury to upper limbs, and penetrating wound of brain.
53	183	860.5 863.50 879.80	MIW of chest, upper limbs, and abdomen, with simple pneumothorax, soft tissue injury to upper limbs, and wound of colon.
54	184	860.50 867.10 863.50	MIW of chest with pneumothorax, pelvis and abdomen, with wound of colon and bladder.
55	185	862.90 863.90	MIW of abdomen and chest with multiple organ damage.
56	313	866.12	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound. Also moderate lacerated kidney—kidney salvageable.

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS: 61J -- General Surgeon

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage	X		
	Coordinate care with nursing OIC	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries	X		
	Establish triage categories	X		
	Prioritize resuscitation	X		
	Prioritize surgery	X		
	Prioritize resources (blood)	X		
	<i>Prioritize evacuation</i>	X		
(Resuscitation)	Lead resuscitation team	X		
	Conduct ATLS primary survey	X		
	Immobilize suspected spine injuries	X		
	Assess airway	X		
	Clear airway	X		
	OP/NP airway	X		
	OT/NT intubation	X		
	Cricothyrotomy	X		
	Assess ventilation	X		
	Assess acute inhalation injury	X		
	Mouth ventilation	X		
	Bag ventilation	X		
	Seal open chest wound	X		
	Needle decompression thoracentesis	X		
	Recognize pulmonary blast injury	X		
	Differentiate shock etiologies	X		
	Determine class of hemorrhagic shock	X		
	Perform fluid resuscitation	X		
	Administer blood transfusions	X		
	<i>Use pneumatic antishock garment</i>	X		
	Use tourniquet	X		
	Chest tube thoracostomy	X		
	Pericardiocentesis	X		
	Nasogastric intubation	X		
	Placement urinary catheter	X		
	Diagnostic peritoneal lavage	X		
	Assess neurologic status (Glasgow coma scale)	X		
	Recognize signs of epidural/subdural hematoma	X		
	Conduct ATLS secondary survey	X		
	Immobilize long bone fractures	X		
	Immobilize unstable pelvic fracture	X		
	Identify suspected major vascular injuries	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH



APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations  
MOS: 61J -- General Surgeon

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Identify suspected compartment syndromes	X		
	<i>Saline dress white phosphorus wounds</i>	X		
	Establish degree and percent body burns	X		
	Dress burn wounds	X		
	<i>Manage cold injuries</i>	X		
	<i>Manage hypothermia</i>	X		
	Identify and dress ocular injuries	X		
<b>Surgical Services</b>		X		
All aspects				
	Coordinate care with nursing OIC	X		
	Coordinate care with nurse anesthetist	X		
Skin & soft tissue				
	Wound debridement & management	X		
	Burn wound management/escharotomy	X		
	<i>White phosphorus wound care</i>	X		
Head & Neck				
	Repair scalp laceration	X		
	Nasal packing	X		
	Tracheostomy	X		
	Neck exploration	X		
	Carotid repair	X		
	Esophageal repair	X		
	Drain epi/subdural hematoma	X		
Abdominal				
	Diaphragm repair	X		
	Gastric repair	X		
	Duodenal repair	X		
	Small bowel repair	X		
	Colon/rectal repair	X		
	Splenectomy/splenorrhaphy	X		
	Repair and drain hepatic laceration	X		
	Damage control laparotomy	X		
	Pancreatic repair/resection	X		
	Nephrectomy/nephrorraphy	X		
	Ureteral repair	X		
	Bladder repair	X		
	Repair abdominal aorta/vena cava	X		
Thoracic				
	Pericardial window	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS: 61J – General Surgeon

Collective Task	Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Repair cardiac injury	X		
	Thoracotomy--chest wall repair	X		
	Thoracotomy--esophageal repair	X		
	Thoracotomy--tracheobronchial repair	X		
	Thoracotomy--lung resection	X		
Extremity				
	Vascular repair/shunt	X		
	Fasciotomies upper & lower extremity	X		
	Amputation upper & lower extremity	X		
	Open fracture management	X		
	External fixation	X		
	Identify and stabilize nerve and tendon injuries	X		
	Open joint management	X		
	Application casts and splints	X		
Post-op Services				
	Coordinate care with nursing OIC	X		
	Manage post-operative care	X		
	Manage spine injuries	X		
	Manage closed head injury	X		
	Manage cardiac contusion	X		
	Manage pulmonary contusion/flail chest	X		
	Manage inhalation injury	X		
	Manage severe burn injury	X		
	<i>Manage primary blast injury</i>	X		
	Manage closed pelvic/femur fracture	X		
	Manage profound hypothermia	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS: 61M – Orthopedic Surgeon

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage		X	
	Coordinate care with nursing OIC		X	
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries	X		
	Establish triage categories		X	
	Prioritize resuscitation		X	
	Prioritize surgery		X	
	Prioritize resources (blood)		X	
	<i>Prioritize evacuation</i>		X	
(Resuscitation)	Lead resuscitation team		X	
	Conduct ATLS primary survey		X	
	Immobilize suspected spine injuries	X		
	Assess airway		X	
	Clear airway		X	
	OP/NP airway		X	
	OT/NT intubation		X	
	Cricothyroidotomy		X	
	Assess ventilation		X	
	Assess acute inhalation injury		X	
	Mouth ventilation		X	
	Bag ventilation		X	
	Seal open chest wound		X	
	Needle decompression thoracentesis		X	
	Recognize pulmonary blast injury		X	
	Differentiate shock etiologies		X	
	Determine class of hemorrhagic shock		X	
	Perform fluid resuscitation		X	
	Administer blood transfusions		X	
	<i>Use pneumatic antishock garment</i>	X		
	Use tourniquet	X		
	Chest tube thoracostomy		X	
	Pericardiocentesis		X	
	Nasogastric intubation		X	
	Placement urinary catheter		X	
	Diagnostic peritoneal lavage		X	
	Assess neurologic status (Glasgow coma scale)		X	
	Recognize signs of epidural/subdural hematoma		X	
	Conduct ATLS secondary survey		X	
	Immobilize long bone fractures	X		
	Immobilize unstable pelvic fracture	X		
	Identify suspected major vascular injuries	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS: 61M – Orthopedic Surgeon

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Identify suspected compartment syndromes	X		
	<i>Saline dress white phosphorus wounds</i>	X		
	Establish degree and percent body burns		X	
	Dress burn wounds		X	
	<i>Manage cold injuries</i>	X		
	<i>Manage hypothermia</i>		X	
	Identify and dress ocular injuries		X	
<b>Surgical Services</b>		X		
All aspects				
	Coordinate care with nursing OIC	X		
	Coordinate care with nurse anesthetist	X		—
Skin & soft tissue				
	Wound debridement & management	X		
	Burn wound management/escharotomy	X		
	<i>White phosphorus wound care</i>	X		
Head & Neck				
	Repair scalp laceration		X	
	Nasal packing			X
	Tracheostomy			X
	Neck exploration			X
	Carotid repair			X
	Esophageal repair			X
	Drain epi/subdural hematoma			X
Abdominal			—	
	Diaphragm Repair			X
	Gastric repair			X
	Duodenal repair			X
	Small bowel repair			X
	Colon/rectal repair			X
	Splenectomy/splenorrhaphy			X
	Repair and drain hepatic laceration			X
	Damage control laparotomy			X
	Pancreatic repair/resection			X
	Nephrectomy/nephrorraphy			X
	Ureteral repair			X
	Bladder repair			X
	Repair abdominal aorta/vena cava			X
Thoracic				
	Pericardial window			X

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
**MOS: 61M – Orthopedic Surgeon**

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Repair cardiac injury			X
	Thoracotomy--chest wall repair			X
	Thoracotomy--esophageal repair			X
	Thoracotomy--tracheobronchial repair			X
	Thoracotomy--lung resection			X
Extremity				
	Vascular repair/shunt			X
	Fasciotomies upper & lower extremity	X		
	Amputation upper & lower extremity	X		
	Open fracture management	X		
	External fixation	X		
	Identify and stabilize nerve and tendon injuries	X		
	Open joint management	X		
	Application casts and splints	X		
Post-op Services				
	Coordinate care with nursing OIC	X		
	Manage post-operative care			X
	Manage spine injuries			X
	Manage closed head injury			X
	Manage cardiac contusion			X
	Manage pulmonary contusion/flail chest			X
	Manage inhalation injury			X
	Manage severe burn injury			X
	<i>Manage primary blast injury</i>			X
	Manage closed pelvic/femur fracture			X
	Manage profound hypothermia			X

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

**APPENDIX B**  
**SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS**  
**FST METL – Perform Combat Health Support Operations**  
**MOS 66H - ICU Nurse / ER Nurse**

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage		X	
	Coordinate care with team	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries	X		
	Establish triage categories		X	
	Prioritize resuscitation		X	
	Prioritize surgery		X	
	Prioritize resources (blood)		X	
	<i>Prioritize evacuation</i>	X		
(Resuscitation)	Lead resuscitation team		X	B
	Conduct ATLS primary survey		X	B
	Immobilize suspected spine injuries		X	B
	Assess airway	X		
	Clear airway	X		
	OP/NP airway	X		
	Emergency OT/NT intubation			X
	Cricothyroidotomy		X	B
	Assess ventilation	X		
	Assess acute inhalation injury	X		
	Mouth ventilation	X		
	Bag ventilation	X		
	Seal open chest wound	X		
	Identification of pneumo/hemo thorax	X		
	Needle decompression thoracentesis		X	B
	Chest tube thoracostomy		X	B
	<i>Recognize pulmonary blast injury</i>	X		
	Differentiate shock etiologies		X	B
	Determine class of hemorrhagic shock		X	B
	Start large bore IV	X		
	Use of Level I Infusor	X		
	Perform fluid resuscitation		X	B
	Administer blood transfusions	X		
	<i>Use pneumatic antishock garment</i>		X	
	Pericardiocentesis		X	B
	Use tourniquet	X		
	Nasogastric intubation	X		
	Place urinary catheter	X		
	Diagnostic peritoneal lavage			X
	Assess neurologic status (Glasgow coma scale)	X		
	Recognize signs of epidural/subdural hematoma	X		
	Conduct ATLS secondary survey		X	B

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS 66H - ICU Nurse / ER Nurse

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Immobilize long bone fractures		X	
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries			X
	Identify suspected compartment syndromes	X		
	<i>Saline dress white phosphorus wounds</i>		X	
	Establish degree and percent body burns	X		
	Dress burn wounds	X		
	<i>Nursing care of cold injuries</i>	X		
	<i>Nursing care of hypothermia</i>	X		
	Identify and dress ocular injuries	X		
	Assess and treat pain	X		
	Acute pain control	X		
	Manage chest tube drainage system	X		
	Emergency drug administration	X		
	Assess and treat psychosocial needs	X		
<b>Surgical Services</b>				
	Coordinate care with surgeon			X
	Coordinate care with nurse anesthetist			X
	Manage surgical setup, scrub and circulate			X
<b>Post-op Services</b>				
	Coordinate care with team	X		
	Provide nursing postoperative care	X		
	Nursing care of postoperative ventilation	X		
	Nursing care of spine injuries	X		
	Nursing care of closed head injury	X		
	Nursing care of cardiac contusion	X		
	Nursing care of pulmonary contusion/flail chest	X		
	Nursing care of inhalation injury	X		
	Nursing care of severe burn injury	X		
	Nursing care of primary blast injury	X		
	Nursing care of closed pelvic/femur fracture	X		
	Nursing care of profound hypothermia	X		
	Manage central IV lines	X		
	Provide large volume blood infusions	X		
	Acute pain control in the ICU patient	X		
<b>General</b>				
	Document assessment and care	X		
	Document emotional support to trauma patients	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
MOS 66F-CRNA

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage		X	
	Coordinate care with nursing OIC	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries	X		
	Establish triage categories		X	
	Prioritize resuscitation		X	
	Prioritize surgery		X	
	Prioritize resources (blood)		X	
	<i>Prioritize evacuation</i>		X	
(Resuscitation)	Lead resuscitation team		X	
	Conduct ATLS primary survey		X	
	Immobilize suspected spine injuries	X	B	
	Assess airway	X		
	Clear airway	X		
	OP/NP airway	X		
	Emergency OT/NT intubation	X		
	Manage traumatic airway	X		
	Manage burned airway	X		
	Cricothyroidotomy		X	B
	Assess ventilation	X		
	Assess acute inhalation injury	X		
	Mouth ventilation	X		
	Bag ventilation	X		
	Seal open chest wound	X		
	Needle decompression thoracentesis		X	B
	Chest tube thoracostomy		X	B
	Pericardiocentesis		X	B
	Manage chest tube drainage system	X		
	<i>Recognize pulmonary blast injury</i>	X		
	Differentiate shock etiologies		X	
	Determine class of hemorrhagic shock		X	
	Start large bore IV	X		
	Start central IV	X		
	Perform fluid resuscitation	X		
	Administer blood transfusions	X		
	Use of Level I Infusor	X		
	<i>Use pneumatic antishock garment</i>	X		
	Use tourniquet	X		
	Nasogastric intubation	X		
	Place urinary catheter		X	
	Diagnostic peritoneal lavage			X

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2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations  
MOS 66F-CRNA

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Assess neurologic status (Glasgow coma scale)	X		
	Recognize signs of epidural/subdural hematoma		X	
	Conduct ATLS secondary survey		X	
	Immobilize long bone fractures			X
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries			X
	Identify suspected compartment syndromes			X
	<i>Saline dress white phosphorus wounds</i>		X	
	Establish degree and percent body burns	X		
	<i>Manage cold injuries</i>		X	
	<i>Manage hypothermia</i>		X	
	Dress burn wounds		X	
	Identify and dress ocular injuries	X		
	Assessment of acute trauma patients	X		
	Assess and treat pain	X		
	Acute pain control	X		
	Emergency drug administration	X		
	Assess and treat psychosocial needs	X		
<b>Surgical Services</b>				
All aspects				
	Coordinate care with surgeon	X		
	Provide general anesthesia	X		
	Provide regional anesthesia	X		
	Preoperative assessment of trauma patients	X		
Skin & Soft Tissue				
	Anesthesia for wound debridement	X		
	Anesthesia for burn wound treatment and escharotomy	X		
	Anesthesia for white phosphorus wound care	X		
Head and Neck				
	Anesthesia for repair scalp laceration	X		
	Anesthesia for nasal packing	X		
	Anesthesia for tracheostomy	X		
	Anesthesia for neck exploration	X		
	Anesthesia for carotid repair	X		
	Anesthesia for esophageal repair	X		
	Anesthesia for drain epi/subdural hematoma	X		
Abdominal				
	Anesthesia for diaphragm repair	X		
	Anesthesia for gastric repair	X		
	Anesthesia for duodenal repair	X		
	Anesthesia for small bowel repair	X		
	Anesthesia for colon/rectal repair	X		
	Anesthesia for splenectomy/splenorrhaphy	X		

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations

MOS 66F-CRNA				
Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Anesthesia for repair and drain hepatic laceration	X		
	Anesthesia for damage control laparotomy	X		
	Anesthesia for pancreatic repair/resection	X		
	Anesthesia for nephrectomy/nephrorraphy	X		
	Anesthesia for ureteral repair	X		
	Anesthesia for bladder repair	X		
	Anesthesia for repair abdominal aorta/vena cava	X		
Thoracic				
	Anesthesia for pericardial window	X		
	Anesthesia for repair cardiac injury	X		
	Anesthesia for thoracotomy--chest wall repair	X		
	Anesthesia for thoracotomy--esophageal repair	X		
	Anesthesia for thoracotomy--tracheobronchial repair	X		
	Anesthesia for thoracotomy--lung resection	X		
Extremity				
	Anesthesia for vascular repair/shunt	X		
	Anesthesia for fasciotomies upper & lower extremity	X		
	Anesthesia for amputation upper & lower extremity	X		
	Anesthesia for open fracture management	X		
	Anesthesia for external fixation	X		
	Anesthesia for identify and stabilize nerve and tendon injuries	X		
	Anesthesia for open joint management	X		
	Anesthesia for application casts and splints	X		
Post-op Services				
	Coordinate care with team	X		
	Manage post anesthesia care	X		
	Manage postoperative ventilation	X		
	Postoperative fluid management	X		
	Postoperative pain management	X	B	
	Manage central IV lines	X		
	Provide large volume blood infusions	X		
	Acute pain control in the ICU patient	X		
	Fluid management of burn patients	X	B	
	Document assessment and care	X		
	Document emotional support to trauma patients	X		
General				
	Document assessment and care	X		
	Document emotional support to trauma patients	X		

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2nd=Extra scope of duty: (training or approval required)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 66E--OR Nurse		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
	Coordinate care with team	X		
(Triage)	Assume command & control of triage			X
	Coordinate care with nursing OIC	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries			X
	Establish triage categories			X
	Prioritize resuscitation			X
	Prioritize resources (blood)			X
	Prioritize surgery			X
	<i>Prioritize evacuation</i>			X
(Resuscitation)	Lead resuscitation team			X
	Conduct ATLS primary survey	X	B	
	Immobilize suspected spine injuries			X
	Assess airway		X	
	Clear airway		X	
	OP/NP airway		X	
	OT/NT intubation			X
	Cricothyroidotomy			X
	Assess ventilation	X		B
	Assess acute inhalation injury			X
	Mouth ventilation		X	
	Bag ventilation		X	
	Seal open chest wound		X	
	Needle decompression thoracentesis			X
	Recognize pulmonary blast injury			X
	Differentiate shock etiologies			X
	Determine class of hemorrhagic shock			X
	Establish peripheral IV	X		
	Perform fluid resuscitation			X
	Administer blood transfusions	X		
	Use of Level I Infusor	X		
	<i>Use pneumatic antishock garment</i>		X	
	Use tourniquet	X		
	Chest tube thoracostomy			X
	Pericardiocentesis			X
	Nasogastric intubation	X		
	Placement urinary catheter	X		
	Diagnostic peritoneal lavage			X
	Assess neurologic status (Glasgow coma scale)	X		
	Recognize signs of epidural/subdural hematoma		X	
	Conduct ATLS secondary survey			X

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 66E--OR Nurse		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
	Immobilize long bone fractures			X
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries			X
	Identify suspected compartment syndromes			X
	<i>Saline dress white phosphorus wounds</i>	X		
	Assess acute inhalation injury			X
	Establish degree and percent body burns			X
	Dress burn wounds	X		
	Treat cold injuries	X		
	Treat hypothermia		X	
	Identify and dress ocular injuries		X	
	Assess and treat pain	X		
	Assess and treat psychosocial needs	X		
<b>Surgical Services</b>				
	PONC=Perioperative Nursing Care			
All aspects				
	Coordinate care with surgeon	X		
	Coordinate care with nurse anesthetist	X		
	Manage surgical setup, scrub and circulate	X		
Skin & soft tissue				
	PONC wound debridement	X		
	PONC burn wound treatment and escharotomy	X		
	White phosphorus wound care	X		
Head & Neck				
	PONC repair scalp laceration	X		
	PONC nasal packing	X		
	PONC tracheostomy	X		
	PONC neck exploration	X		
	PONC carotid repair	X		
	PONC esophageal repair	X		
	PONC drain epi/subdural hematoma	X		
Abdominal				
	PONC diaphragm repair	X		
	PONC gastric repair	X		
	PONC duodenal repair	X		
	PONC small bowel repair	X		
	PONC colon/rectal repair	X		
	PONC splenectomy/splenorrhaphy	X		
	PONC repair and drain hepatic laceration	X		
	PONC damage control laparotomy	X		
	PONC pancreatic repair/resection	X		

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**APPENDIX B**  
**SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS**  
**FST METL – Perform Combat Health Support Operations**

<b>MOS 66E--OR Nurse</b>				
<i>Italics indicates training not available at BTGH</i>		<b>Scope of Duty</b>		
<b>Collective Task</b>	<b>Supporting Soldier Tasks</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>
	PONC nephrectomy/nephrorraphy	X		
	PONC ureteral repair	X		
	PONC bladder repair	X		
	PONC repair abdominal aorta/vena cava	X		
<b>Thoracic</b>				
	PONC pericardial window	X		
	PONC repair cardiac injury	X		
	PONC thoracotomy--chest wall repair	X		
	PONC thoracotomy--esophageal repair	X		
	PONC thoracotomy--tracheobronchal repair	X		
	PONC thoracotomy--lung resection	X		
<b>Extremity</b>				
	PONC vascular repair/shunt	X		
	PONC fasciotomies upper & lower extremity	X		
	PONC amputation upper & lower extremity	X		
	PONC open fracture management	X		
	PONC external fixation	X		
	PONC identify and stabilize nerve and tendon injuries	X		
	PONC open joint management	X		
	Application casts and splints	X		
<b>Post-op Services</b>				
	Coordinate care with team	X		
	Provide nursing postoperative care	X		B
	Nursing care of, spine injuries		X	B
	Nursing care of closed head injury		X	B
	Nursing care of cardiac contusion		X	B
	Nursing care of pulmonary contusion/flail chest		X	B
	Nursing care of inhalation injury		X	B
	Nursing care of severe burn injury		X	B
	Nursing care of primary blast injury		X	B
	Nursing care of closed pelvic/femur fracture		X	B
	Nursing care of profound hypothermia		X	B
<b>General</b>				
	Document assessment and care	X		B
	Document emotional support to trauma patients	X		B

1st=Normal scope of duty;

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations

MOS 91C - Practical Nurse				
Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage			X
	Coordinate care with nursing OIC	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Establish triage categories			X
	Establish triage categories (per tactical situation)			X
	Prioritize resuscitation			X
	Prioritize surgery			X
	Prioritize resources (blood)			X
	<i>Prioritize evacuation</i>			X
(Resuscitation)	Lead resuscitation team			X
	Conduct ATLS primary survey			X
	Immobilize suspected spine injuries		X	B
	Assess airway	X		
	Clear airway	X		
	OP/NP airway	X		
	OT/NT Intubation		X	B
	Cricothyroidotomy		X	B
	Assess ventilation	X		
	Assess acute inhalation injury			X
	Mouth ventilation	X		
	Bag ventilation	X		
	Seal open chest wound	X		
	Identification of pneumo/hemo thorax		X	
	Needle decompression thoracentesis		X	B
	Chest tube thoracostomy		X	B
	Pericardiocentesis		X	B
	Manage chest tube drainage system	X		
	Recognize pulmonary blast injury		X	
	Differentiate shock etiologies			X
	Determine class of hemorrhagic shock			X
	Start large bore IV	X		
	Use of Level I Infusor			X
	Perform fluid resuscitation			X
	Monitor blood transfusions		X	
	Use tourniquet		X	B
	Assess neurologic status (Glasgow coma scale)		X	
	Recognize signs of epidural/subdural hematoma		X	
	Conduct ATLS secondary survey			X
	Immobilize long bone fractures		X	
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries			X

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations  
**MOS 91C - Practical Nurse**

Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	Identify suspected compartment syndromes			X
	<i>Saline dress white phosphorus wounds</i>	X		
	Establish degree and percent body burns	X		
	Dress burn wounds	X		
	<i>Treat cold injuries</i>		X	
	<i>Treat hypothermia</i>		X	
	Identify and dress ocular injuries		X	
	Acute pain control		X	B
	Assess and treat pain		X	B
	Assess and treat psychosocial needs		X	
	a Perform a patient care handwash	X		
	a Measure and record patients respiration's	X		
	a Measure and record patients pulse	X		
	a Measure and record patients blood pressure	X		
	a Measure and record patients temperature	X		
	a Establish and maintain a sterile field	X		
	a Change a sterile dressing	X		
	a Perform wound irrigation	X		
	a Insert an oral pharyngeal airway	X		
	a Ventilate patient with a bag-valve-mask device	X		
	a Set up an oxygen tank	X		
	administer oxygen therapy using a face mask or nasal			
	a prongs	X		
	a Perform oral and nasotracheal suctioning of a patient	X		
	a Obtain a blood specimen using a vacutainer	X		
	a Initiate an intravenous infusion	X		
	a Manage a patient with an intravenous infusion	X		
	a Initiate treatment for hypovolemic shock	X		B
	a Irrigate an obstructed ear	X		
	a Apply restraining devices to patients	X		
	a Assemble needle and syringe and draw medications	X		
	a Administer an injection (IM, sub-q and ID)	X		
	a Administer blood	X		B
	a Administer oral medications	X		
	a Administer medications by IV piggyback	X		
	a Obtain an electrocardiogram	X		
	a Maintain an indwelling urinary catheter	X		
	a Provide nursing care for a patient in a cast	X		
	a Insert a urinary catheter	X		
	a Provide special skin care	X		
	a Administer topical medication	X		
	a Administer rectal or vaginal medications	X		
	a Administer medicated eye drops or ointments	X		
	a Perform tracheotomy suctioning	X		

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91C - Practical Nurse				
Collective Task	<i>Italics indicates training not available at BTGH</i> Supporting Soldier Tasks	Scope of Duty		
		1st	2nd	3rd
	a Perform tracheotomy care	X		
<b>Surgical Services</b>				
<b>Post-op Services</b>				
	Coordinate care with team	X		
	Provide nursing postoperative care	X		
	Nursing care of postoperative ventilation		X	B
	Nursing care of spine injuries	X		
	Nursing care of closed head injury	X		
	Nursing care of cardiac contusion	X		
	Nursing care of pulmonary contusion/flail chest	X		
	Nursing care of inhalation injury	X		
	Nursing care of severe burn injury	X		
	Nursing care of primary blast injury	X		
	Nursing care of closed pelvic/femur fracture	X		
	<i>Nursing care of profound hypothermia</i>	X		
	Manage central IV lines	X		
	Acute pain control in the ICU patient	X		
<b>General</b>				
	Document assessment and care	X		
	Document emotional support to trauma patients	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91D-OR Technician		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
<b>Treat Unit Casualties</b>				
	91B level tasks only			
<b>Pre-op Services</b>				
<b>(Triage)</b>	Coordinate care with team	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Identify life & limb threatening injuries			X
	Establish triage categories			X
	Prioritize resuscitation			X
	Prioritize surgery			X
	Prioritize evacuation			X
	Prioritize resources (blood)			X
<b>(Resuscitation)</b>	Start peripheral IV		X	
	Lead resuscitation team			X
	Conduct ATLS primary survey			X
	Immobilize suspected spine injuries			X
	Assess airway			X
	Clear airway			X
	OP/NP airway			X
	OT/NT intubation			X
	Cricothyrotomy			X
	Assess ventilation			X
	Assess acute inhalation injury			X
	Mouth ventilation			X
	Bag ventilation			X
	Seal open chest wound		X	
	Needle decompression thoracentesis			X
	Recognize pulmonary blast injury			X
	Differentiate shock etiologies			X
	Determine class of hemorrhagic shock			X
	Perform fluid resuscitation			X
	Administer blood transfusions			X
	Use pneumatic antishock garment			X
	Use tourniquet		X	
	Chest tube thoracostomy			X
	Pericardiocentesis			X
	Nasogastric intubation		X	B
	Place urinary catheter		X	B
	Diagnostic peritoneal lavage			X
	Assess neurologic status (Glasgow coma scale)			X
	Recognize signs of epidural/subdural hematoma			X
	Conduct ATLS secondary survey			X
	Immobilize long bone fractures			X
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries			X

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL – Perform Combat Health Support Operations

MOS 91D-OR Technician		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
	Identify suspected compartment syndromes			X
	<i>Saline dress white phosphorus wounds</i>		X	
	Establish degree and percent body burns			X
	Dress burn wounds		X	
	Treat cold injuries			X
	Treat hypothermia			X
	Identify and dress ocular injuries		X	
	Assess and treat pain			X
	Assess and treat psychosocial needs			X
<b>Surgical Services</b>				
	PONC=Perioperative Nursing Care			
All aspects				
	a Process items for sterilization	X		
	a Prepare instrument sets	X		
	a Perform chemical disinfection or sterilization	X		
	a Perform the surgical hand and arm scrub	X		
	a Put on sterile gown and gloves	X		
	a Gown and glove surgical team members	X		
	a Assist surgical team members in the gown and glove procedure	X		
	a Select sterile supplies for a surgical procedure	X		
	a Arrange instruments and supplies on a sterile field	X		
	a Drape mayo stand and tray	X		
	a Arrange prep, linens and basin sets, gowns and gloves	X		
	a Position equipment draped with sterile linen	X		
	a Prepare the electrosurgical unit for a surgical procedure	X		
	a Remove soiled items from the OR following a surgical procedure	X		
	a Dispose of contaminated liquids and solids	X		
	a Clean the OR	X		
	a Prepare the patient for movement to the OR	X		
	a Perform the surgical shave prep	X		
	a Assist in placing a patient in/out of the lithotomy position	X		
	a Assist in placing a patient in the Kraske (jackknife) position	X		
	a Assist in draping the patient for a surgical procedure	X		
	a Apply/remove a pneumatic tourniquet on a patient	X		
	a Weigh sponges and calculate blood loss	X		
	a Pass suture materials	X		
	a Process specimens and cultures	X		
	a Pass instruments and supplies during a surgical procedure	X		

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

		MOS 91D-OR Technician			
		<i>Italics indicates training not available at BTGH</i>	Scope of Duty		
Collective Task		Supporting Soldier Tasks	1st	2nd	3rd
	a	Perform sponge, instrument, sharps and needle counts	X		
		Coordinate care with surgeon	X		
		Coordinate care with nurse anesthetist	X		
		Manage surgical setup, scrub and circulate	X		
Skin & soft tissue					
		PONC wound debridement	X		
		PONC burn wound treatment and escharotomy	X		
		White phosphorus wound care		X	
Head & Neck					
		PONC repair scalp laceration	X		
		PONC nasal packing	X		
		PONC tracheostomy	X		
		PONC neck exploration	X		
		PONC carotid repair	X		
		PONC esophageal repair	X		
		PONC drain epi/subdural hematoma	X		
Abdominal					
		PONC diaphragm repair	X		
		PONC gastric repair	X		
		PONC duodenal repair	X		
		PONC small bowel repair	X		
		PONC colon/rectal repair	X		
		PONC splenectomy/splenorrhaphy	X		
		PONC repair and drain hepatic laceration	X		
		PONC damage control laparotomy	X		
		PONC pancreatic repair/resection	X		
		PONC nephrectomy/nephrorraphy	X		
		PONC ureteral repair	X		
		PONC bladder repair	X		
		PONC repair abdominal aorta/vena cava	X		
Thoracic					
		PONC pericardial window	X		
		PONC repair cardiac injury	X		
		PONC thoracotomy--chest wall repair	X		
		PONC thoracotomy--esophageal repair	X		
		PONC thoracotomy--tracheobronchial repair	X		
		PONC thoracotomy--lung resection	X		
Extremity					
		PONC vascular repair/shunt	X		
		PONC fasciotomies upper & lower extremity	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH

APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91D-OR Technician		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>				
Collective Task	Supporting Soldier Tasks	1st	2nd	3rd
	PONC amputation upper & lower extremity	X		
	PONC open fracture management	X		
	PONC external fixation	X		
	PONC identify and stabilize nerve and tendon injuries	X		
	PONC open joint management	X		
	Application casts and splints	X		
<b>Post-op Services</b>				
	Coordinate care with team	X		
	Provide nursing postoperative care			X
	Nursing care of spine injuries			X
	Nursing care of closed head injury			X
	Nursing care of cardiac contusion			X
	Nursing care of pulmonary contusion/flail chest			X
	Nursing care of inhalation injury			X
	Nursing care of severe burn injury			X
	Nursing care of primary blast injury			X
	Nursing care of closed pelvic/femur fracture			X
	Nursing care of profound hypothermia			X
<b>General</b>				
	Document assessment and care	X		B
	Document emotional support to trauma patients	X		B

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91B - EMT		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
<b>Treat Unit Casualties</b>				
	a Prepare intubation equipment	X		
	a Intubate a patient	X		B
	a Put on sterile gloves	X		
	a Measure a patients respiration's	X		
	a Measure a patients pulse	X		
	a Measure a patients blood pressure	X		
	a Measure a patients temperature	X		
	a Open the airway	X		
	a Clear an upper airway obstruction	X		
	a Manage a convulsive and/or seizing patient	X		B
	a Treat a casualty for a heat injury	X		
	a Treat a casualty for a cold injury	X		
	a Immobilize a suspected dislocated and/or fractured ankle using a splint	X		
	a Apply pneumatic splint to a casualty with suspected fracture of an extremity	X		
	a Administer external cardiac compressions	X		
	a Perform rescue breathing	X		
	a Survey a casualty	X		
	a Insert an oropharyngeal airway	X		B
	a Ventilate a patient with a bag-valve-mask system	X		
	a Administer oxygen therapy using a face mask or nasal prongs	X		
	a Perform oral and nasotracheal suctioning of a patient	X		
	a Initiate treatment for anaphylactic shock	X		
	a Initiate an intravenous infusion	X		
	a Manage a patient with an intravenous infusion	X		B
	a Manage a patient with an open abdominal wound	X		B
	a Apply a dressing to an impalement injury	X		
	a Initiate treatment for hypovolemic shock	X		B
	a Manage an unconscious casualty	X		B
	a Treat a casualty with a closed chest wound	X		B
	a Treat a casualty with an open or closed head injury	X		B
	a Irrigate eyes	X		
	a Treat lacerations, contusions, and extrusions of the eye	X		B
	a Treat burns of the eye	X		B
	a Apply a roller bandage	X		
	a Apply arm slings	X		
	a Immobilize a suspected fracture of the arm or dislocated shoulder	X		B
	a Immobilize a suspected dislocated or fractured hip	X		B
	a Administer initial treatment for burns	X		B
	a Treat a casualty for insect bites or stings	X	B	
	a Treat a casualty for snakebite	X		B

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2nd=Extra scope of duty: (training or approval required)

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91B - EMT		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
	a Immobilize a fractured femur using Hare traction splint	X		
	a Transport a casualty with a suspected spinal injury	X		
	a Perform a surgical cricothyrotomy	X		B
	a Apply pneumatic anti-shock garment	X		
	a Stabilize a casualty with inhalation burns	X		B
<b>Pre-op Services</b>				
(Triage)	Assume command & control of triage			X
	Coordinate care with team	X		
	<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>	X		
	Establish triage categories		X	B
	Identify life & limb threatening injuries		X	B
	Prioritize resuscitation			X
	Prioritize surgery			X
	Prioritize resources (blood)			X
	<i>Prioritize evacuation</i>			X
(Resuscitation)	Lead resuscitation team			X
	Conduct ATLS primary survey			X
	Immobilize suspected spine injuries			X
	Assess airway		X	
	Clear airway		X	
	OP/NP airway		X	
	OT/NT intubation		X	B
	Cricothyrotomy		X	B
	Assess ventilation	X		
	Access acute inhalation injury			X
	Mouth ventilation	X		
	Bag ventilation	X		
	Seal open chest wound	X		
	Identification of pneumo/hemo thorax		X	
	Needle decompression thoracentesis		X	B
	Chest tube thoracostomy		X	B
	Pericardiocentesis			X
	Manage chest tube drainage system		X	B
	Recognize pulmonary blast injury		X	B
	Differentiate shock etiologies		X	B
	Determine class of hemorrhagic shock		X	B
	Start large bore IV	X		
	Use of Level I Infusor			X
	Perform fluid resuscitation		X	B
	Administer blood transfusions		X	B
	Use tourniquet			X
	Diagnostic peritoneal lavage			X
	Assess neurologic status (Glasgow coma scale)		X	B

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91B - EMT		Scope of Duty		
<i>Italics indicates training not available at BTGH</i>		1st	2nd	3rd
Collective Task	Supporting Soldier Tasks			
	Recognize signs of epidural/subdural hematoma		X	B
	Conduct ATLS secondary survey			X
	Immobilize long bone fractures	X		B
	Immobilize unstable pelvic fracture			X
	Identify suspected major vascular injuries		X	B
	Identify suspected compartment syndromes		X	B
	<i>Saline dress white phosphorus wounds</i>	X		
	Establish degree and percent body burns		X	
	Dress burn wounds	X		
	<i>Treat cold injuries</i>		X	
	<i>Treat hypothermia</i>		X	
	Identify and dress ocular injuries		X	
	Acute pain control		X	B
	Assess and treat pain		X	B
	Assess and treat psychosocial needs		X	
	a Perform a patient care handwash	X		
	a Establish a sterile field	X		
	a Perform a wound irrigation	X		
	a Prepare an area for operative treatment	X		
	a Obtain a blood specimen using a vacutainer	X		
	a Treat foreign bodies of the eye	X		B
	a Irrigate an obstructed ear	X		
	a Perform a needle cricothyrotomy	X		B
	a <i>Deflate pneumatic anti-shock garment</i>	X		
	a <i>Maintain pneumatic anti-shock garment</i>	X		
	a Insert urinary catheter	X		
	a Insert a nasogastric tube	X		
	a Prepare for nasogastric intubation	X		
	a Prepare for urinary catheterization	X		
<b>Surgical Services</b>				
<b>Post-op Services</b>				
	a Extubate a patient		X	B
	a Measure a patients intake and output	X		
	a Change a sterile dressing	X		
	Coordinate care with team	X		
	Provide nursing postoperative care		X	
	Manage postoperative ventilation			X
	Nursing care of spine injuries		X	
	Nursing care of closed head injury		X	
	Nursing care of cardiac contusion		X	

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APPENDIX B  
SUPPORTING SOLDIER AND COLLECTIVE TASKS PER MOS  
FST METL -- Perform Combat Health Support Operations

MOS 91B - EMT				
<i>Italics indicates training not available at BTGH</i>		Scope of Duty		
Collective Task	Supporting Soldier Tasks	1st	2nd	3rd
	Nursing care of pulmonary contusion/flail chest		X	
	Nursing care of inhalation injury		X	
	Nursing care of severe burn injury		X	
	<i>Nursing care of primary blast injury</i>		X	
	Nursing care of closed pelvic/femur fracture		X	
	Nursing care of profound hypothermia		X	
	Manage central IV lines			X
	Monitor large volume blood infusions			X
	Acute pain control in the ICU patient			X
<b>General</b>				—
	Document assessment and care	X		
	Document emotional support to trauma patients	X		

1st=Normal scope of duty;

2nd=Extra scope of duty: (training or approval required)

3rd=Outside scope of duty: (assist only)

X= Scope within FST B= Medical/legal scope at BTGH



**APPENDIX C**  
**Comprehensive Listing of Single Organ Injuries of FST Patient Conditions**

<b>Diagnosis #</b>	<b>Comprehensive listing of single organ injuries for FST Patient Conditions</b>	<b>Individual ICD-9 Code</b>
1	Closed Head Injury w/ Epidural / Subdural Hematoma	801.2
		803.2
		852.4
2	Closed Head Injury w/ intracerebral injury	803.3
		803.4
		851.0
3	Maxillofacial Fractures w/ emergency airway	802.3
		802.5
		802.9
		873.5
		874.9
		900.9
4	Head and neck wounds w/ emergency airway	873.5
		874.9
		900.9
5	Upper arm neurovascular compromise	880.1
		903.0
		903.1
		903.9
		955.0
6	Traumatic upper extremity amputation	887.2
		887.3
7	Penetrating pneumothorax	807.1
		860.5
8	Major blunt liver injury	864.04
9	Minor blunt liver injury	864.01
		864.02
		864.03
10	Major blunt spleen injury	865.0
11	Penetrating colon injury	863.5
12	Penetrating small bowel injury	863.3
13	Major penetrating liver injury	864.14
14	Moderate penetrating liver injury	864.12
		864.13
15	Penetrating splenic injury	865.1
16	Penetrating kidney injury	866.13
17	Penetrating kidney injury with failed nephroaprrhy	866.12
		908.1
18	Shattered bladder	867.1
19	Pelvic Fracture	808.1
		808.3
		808.5
		808.9
20	Pelvic organ / vascular injuries	867.1
		867.3
		867.5

**APPENDIX C**  
**Comprehensive Listing of Single Organ Injuries of FST Patient Conditions**

<b>Diagnosis #</b>	<b>Comprehensive listing of single organ injuries for FST Patient Conditions</b>	<b>Individual ICD-9 Code</b>
		867.7
		867.9
		902.5
		902.8
		902.9
21	Rectal injury	863.50
		863.55
		863.56
22	Femur Fracture	821.1
		821.3
23	Femoral vessel / nerve injuries	904.1
		904.2
		904.3
		904.4
		956.0
		956.1
		956.9
24	Tibial / fibular fracture	823.1
		823.3
		823.9
25	Tibial vessel / nerve injury	904.5
		956.2
		956.3
26	Ankle / foot fracture	824.1
		824.3
		824.5
		824.7
		824.9
		825.1
		825.3
		826.1
27	Tibial plantar vessel / nerve injury	904.5
		904.6
		956.2
		956.3
28	Crush injury, lower extremity	928.0
29	Traumatic unilateral above knee amputation	897.3
		897.2
30	Penetrating Brain injury	851.1
		851.3
		851.5
		851.7
		851.9
		852.1
		852.3
		852.5

**APPENDIX C**  
**Comprehensive Listing of Single Organ Injuries of FST Patient Conditions**

<b>Diagnosis #</b>	<b>Comprehensive listing of single organ injuries for FST Patient Conditions</b>	<b>Individual ICD-9 Code</b>
		853.1
		854.1
31	Traumatic bilateral above knee amputation	897.6
		897.7
32	Soft tissue wounds	879.1
		879.3
		879.4
		879.5
		879.6
		879.9
		879.8
		880.0
		881.0
		890.0
		891.0
33	Third degree burns	948.22
		948.33
		948.44
		948.55
		948.66
		948.77
		948.88
		948.99
34	Thoracic organ injuries	861.3
		862.1
		862.3
		862.9
35	Gastric injury	863.1

## TRAINING ANALYSIS

### COMBAT TRAUMA SURGICAL TRAINING (CTST) of a FORWARD SURGICAL TEAM (FST)

#### The Ben Taub Pilot Project (September 1998)

##### 1. Training Objectives:

As noted in the training plan, the CTST pilot study presumed that FST surgical readiness would be maximized if the following training objectives were met during the deployment to BTGH:

- a. The FST providers conducted adequate individual skills trauma training in their supporting soldier tasks.
- b. The FST conducted adequate team training in its surgical collective tasks.
- c. The FST conducted adequate unit training in its Provide Surgical Care METL task.
- d. The FST demonstrated the ability to obtain quality trauma outcomes (which met national trauma care standards) using BTGH trauma protocols to care for civilian trauma victims.
- e. The FST identifies how BTGH trauma protocols will be modified for an FST environment to obtain optimal combat casualty results.
- f. The FST becomes confident of its modified approach towards combat casualty care and that its level of CTST will provide optimal combat casualty results.

##### 2. Data Gathering Methodology:

To conduct the training analysis six separate data collection tools were developed and modified. The intent was to create or utilize tools that would enable the authors to obtain the required data in a replicable and appropriate manner.

The first tool developed was the Volunteer Agreement (Appendix A) or informed consent for release of individual information. This enabled the authors to analyze, utilize and publish the information obtained through the surveys. As part of the Volunteer Agreement each FST member drew a number from a hat. To facilitate data integrity and individual privacy this number was used as a codebook number to identify the individual respondent. The codebook number and individual identity were maintained in a secured log available only to the principal investigators.

The Initial Survey Scenario (Appendix B) was developed to provide FST members with a scenario to facilitate answering the pre survey questions.

The Training History (Appendix C) was developed to provide a snapshot of the training and experiential background of each of the FST members. This information was only used to allow the pilot observer controllers (OC) to gain an understanding of the team member's deployment and training experiences. (The authors do not anticipate this tool being utilized in the future rotations.)

The Pre / Post Survey (Appendix D) was developed to determine if the FST members experienced any change in their level of confidence as a result of the CTST. The pre / post survey was built based on a general expectation of success model using a likert scale. The

respondents answered a variety of questions; selecting 1 if they strongly disagreed, 2 if they disagreed, 3 if they neither agreed nor disagreed, 4 if they agreed, and 5 if they strongly agreed. The survey consisted of four component parts separated by Military Occupational Specialty (MOS). The first component contained questions based on individual skills. The second component included questions based on team skills. All FST members answered the questions in the first and second components. The third component contained specific questions based on physician or nursing combined MOSs. Physicians answered the physician specific questions and the nursing personnel answered the nursing specific questions. The fourth and final component detailed questions based on the individual respondents MOS. The survey was prepared and printed out using the Microsoft spreadsheet program, Excel 97.

The volunteer agreement, initial survey, training history and pre-survey was administered and collected on the day the team members arrived in Houston to begin training. The data was then entered into the Statistical Package for the Social Sciences (SPSS) version 8.0 for windows.

The Supporting Soldier and Collective Tasks per MOS (found in Appendix C to enclosure 2 of the training plan) were modified into a final format labeled as the Trauma Case Log and Supporting Soldier Tasks (Appendix E). These tools were specifically developed to document the completion of the FST provider's surgical supporting soldier tasks. The physicians tasks were divided into two separate spreadsheets, the first containing the supporting soldier tasks and the second containing the trauma case log. The trauma case log facilitated each surgeon tracking the operative cases performed focusing on residency review committee (RRC) appropriate cases. The supporting soldier tasks for physicians allowed consistency of analysis with the other team members in evaluating the types of basic procedures the Army Trauma Team performed.

Each FST member was issued a copy of their specific MOS trauma case log and supporting soldier tasks. The members tracked, on a daily basis, the number of iterations they completed for each supporting soldier task, while providing hands-on patient care at BTGH. This data was collected on a daily basis and compiled at the end of the pilot using Microsoft Excel 97 spreadsheet software.

The Final Survey Scenario (Appendix F) was developed to provide FST members with a scenario to facilitate answering the post survey questions.

The After Action Comment sheet (Appendix G) was developed to capture anecdotal information about the FST members CTST experience to facilitate revision of the training experience.

All tools were developed through a multi-disciplinary team of subject matter experts from the Combat Trauma Surgical Committee, Brooke Army Medical Center's Department of Surgery, Department of Nursing, and the pilot projects primary investigators.

### 3. Training Analysis:

The CTST plan devised for the pilot utilized, first and foremost, the training metrics, tools, and standards already established by the Army. The training source documents for FSTs are: (1) FM 8-10-25 "Employment of Forward Surgical Teams: Tactics, Techniques, and Procedures" and (2) ARTEP 8-518-10 "Mission Training Plan for the Forward Surgical Team and Forward Surgical Team (Airborne). The above publications will be referred to hereafter as the FM 8-10-25-TTP and ARTEP 8-518-10-MTP respectively.

The six training objectives for CTST will be analyzed in a step-wise fashion in the following paragraphs.

a. The providers conducted adequate individual trauma skill training in their surgical supporting soldier tasks.

The first portion of the individual skills analysis dealt with the number of CTST cases performed by the surgeons and nurse anesthetists compared to the relevant military standards available. The second portion of the individual skills analysis documents the percent CTST completion of the trauma case log and supporting soldier tasks (Appendix E) listed for each MOS.

#### Surgeon and Nurse Anesthetist Individual Case Analysis

Although trauma care requires a team effort, the General Surgeon's role as the team leader is vitally important to successful patient outcomes. This vital role led the Combat Trauma Surgical Committee to focus its attention on establishing CTST standards for General Surgeons. The current CTST standard is for each General Surgeon to manage at least twenty major trauma cases every two years.

The three General Surgeons of the FST were each assigned to one of three BTGH surgery services. They functioned as trauma fellows and were in charge of the care and management of every patient (trauma surgical admission) admitted to their service. During the one-month course of their CTST at BTGH, the number of trauma admissions that each FST General Surgeon managed ranged from 22 to 40 with a mean number of trauma cases managed of 32. Therefore, CTST individual training standards for General Surgeons were met at BTGH during the pilot project.

Trauma resuscitation, surgical decision-making, and intensive care involve cognitive skills and procedures necessary for the optimal management of trauma patients. However, the importance of a surgeon's trauma operative experience cannot be underestimated. Primary trauma cases were defined as acute trauma cases requiring surgical intervention that met the index case criteria established by the Residency Review Committee (RRC). The RRC is a civilian organization that establishes the requirements and certification for both military and civilian General Surgery residency programs. The RRC trauma index cases are a list of 30 specific major trauma operations. Over a five-year General Surgery residency, a resident must perform 16 operations in any combination from the overall list of 30 trauma index cases in order to graduate. The number of primary trauma operative cases, performed or staffed, by the FST General Surgeons during their CTST ranged from 12 to 16 with a mean of 14 trauma cases. The FST surgeons almost met this military-recognized General Surgery residency graduation standard, in only one month of CTST at BTGH.

The operative experience of the FST General Surgeons at BTGH also included performing or staffing secondary trauma cases (delayed surgical procedures for complications), non-trauma emergency surgery, and some elective surgical procedures. The comprehensive CTST experience of the FST General Surgeons is listed in Table 1 to include number of nights of call, admissions (cases managed), and number of primary trauma cases performed.

**Table 1**

Surgeon	Nights of Call	Admissions	Primary Trauma Cases
A	9	22	12
B	9	34	16
C	10	40	14
Total	28	96	42
Mean	9.3	32	14

To establish military training relevancy, the trauma operative case experience of the CTST General Surgeons was compared to their Army peacetime experience. The three FST General Surgeons in the year prior to their CTST training functioned as staff surgeons assigned to one of the Army's Trauma Centers (either Brooke or William Beaumont Army Medical Center). Table 2 compares the combined one-month (September 1998) CTST experience of the three FST General Surgeons to their prior year (September 1997 through August 1998) of peacetime trauma experience at Army Trauma Centers (ATCs). The numbers of twenty-four hour calls, primary trauma operations (cases), mean number of cases per of call, percent of cases due to penetrating trauma, and percent of cases with Injury Severity Scores above 15 are listed.

The fourth column in table 2 (below) compares the intensity of operative experience for one month of CTST at BTGH to an average month's peacetime experience for the three FST General Surgeons at their home ATCs. The FST General Surgeons took 3 times as much call at BTGH for the month and per call performed 8.6 times as many primary trauma operative cases. The one-month CTST trauma operative experience was therefore over 25 times busier for the three General Surgeons as an average surgery staff month at their ATCs. The data indicated the three FST General Surgeons would need to take over two more years of call, at their ATCs, to duplicate the trauma operative experience they received at BTGH in one month.

**Table 2**

	ATC (average month)	BTGH (Sep 98)	BTGH (intensity)
Calls	9.5	28	3.0
Cases	1.7	42	25.2
Cases per Call	0.175	1.5	8.6
Percent Penetrating	55%	57%	=
Percent ISS > 15	40%	57%	1.4

On the battlefield, the FST surgeons will treat trauma patients with multiple penetrating injuries due to bullet or fragmentation missiles. The percent of trauma patients operated on at ATCs and BTGH with penetrating injuries was comparable, 55% and 57% respectively. However, the percent of operative cases at ATCs and BTGH with Injury Severity Scores (ISSs) greater than 15 was 40% and 57% respectively. The ISS is standardized trauma registry reporting system that numerically grades traumatic anatomic injuries (see "Resources for the Optimal Care of the Injured Patient"). The ISSs range in increasing severity of injury from 0 (no injury) to 75 (universally fatal). The standard ISS definition of a major trauma injury is an ISS greater than 15 predictive of a 10% or greater mortality. The ISS data therefore suggests that the trauma population at BTGH, during the month of CTST, had more extensive anatomic injuries

than those operated on during the previous year at the ATCs. The operative trauma cases at BTGH may constitute a more effective combat casualty training instrument for the FST surgeons than those seen during the previous year at the ATCs.

To establish relevancy for the military battlefield, the trauma operative case experience of the CTST General Surgeons was compared to mass casualty events from recent Army deployments. As noted previously in table 2, the mean number of primary trauma operations performed per CTST surgeon per twenty-four hours of BTGH call was 1.5 cases. In comparison, the largest acute mass casualty event of the Gulf War was experienced by the 41<sup>st</sup> Combat Support Hospital (CSH) at Jalibah, Iraq (personal knowledge of the studies authors). Of the sixty casualties treated at Jalibah, six required life or limb saving operative interventions. The four trauma experienced General Surgeons of the 41<sup>st</sup> CSH at Jalibah performed these six operations yielding a mean of 1.5 primary trauma operations per surgeon for their mass casualty event. The busiest operative experience for one of the CTST General Surgeons at BTGH was 4 primary trauma operative cases in a single twenty-four hours of call. In comparison, the senior Army General Surgeon supporting the Rangers in Somalia during their mass casualty event performed 5 life or limb saving operations over twenty-four hours (personal communication with LTC John Holcomb, 29 September 1998). The data indicated the CTST primary trauma operative experience at BTGH, for both an average and busy day of call, compared favorably to the operative trauma experience of deployed Army General surgeons during recent mass casualty events.

The FST Orthopedic Surgeon conducting his CTST training at BTGH functioned as a trauma fellow. Over the month rotation, he performed or staffed the following trauma operative cases: 7 external fixations, 14 open reduction internal fixations, three trauma re-constructions (involving external fixation and bone grafting), one open knee irrigation and debridement (for delayed infection), and one above knee amputation (for chronic osteomyelitis). There are no quantitative CTST standards (i.e., number of orthopedic cases) established for Orthopedic Surgeons. However, the senior Army Trauma Orthopedic Surgeon provided a peacetime military training comparison. He reported that military Orthopedic Surgeons greater than three years out of training (i.e., the target training population for CTST) performed only 0.75 external fixations and cared for 0.3 open long bone fractures per year per surgeon (personal communication with MAJ Rob Harris, October 1998). The data indicated an average military Orthopedic Surgeon would require ten or more years of peacetime trauma exposure working at military hospitals to equal the one-month operative CTST orthopedic trauma experienced at BTGH.

The two FST certified registered nurse anesthetists (CRNAs) were credentialled as BTGH staff CRNAs for their CTST and were under the supervision of staff BTGH anesthesiologists. Over the month rotation, their mean number of anesthesia cases performed was thirteen acute trauma cases and three for non-trauma emergency cases. In addition, their mean trauma anesthesia experience included managing ten trauma airways and functioning as trauma team leaders in nine emergency room resuscitations. There are no quantitative CTST standards (i.e., number of anesthesia cases) established for CRNAs. However, the two FST CRNAs reported the trauma exposure and education they received in one month at BTGH exceeded the trauma training they had obtained in ten combined years of CRNA staff assignments at peacetime Army hospitals. The individual data for the CRNA's is included in table 3.



Table 3

Procedure / Case	CRNA A	CRNA B
Acute Trauma Cases	12	14
Non-Trauma Cases	3	3
Trauma Airways	8	12
Trauma Team Leader	8	10
Years Experience as CRNA	6	4

### Surgical Individual Supporting Soldier Tasks Analysis

The FST is composed of nineteen health care provider personnel distributed in the following nine Military Occupational Specialty (MOS) areas:

- (3) 61J00 General Surgeons
- (1) 61M00 Orthopedic Surgeon
- (2) 66F00 Nurse Anesthetists
- (1) 66H8A Critical Care Nurse
- (1) 66E00 Operating Room (OR) Nurse
- (1) 66H00 Emergency Room (ER) Nurse
- (3) 91C Licensed Vocational Nurses (LVNs)
- (3) 91D OR Technicians
- (4) 91B Emergency Medical Technicians (EMT's)

Examination of ARTEP 8-518-10-MTP (page C-1) for FSTs, revealed individual supporting soldier tasks listed only for the enlisted provider specialties (91B, 91C, and 91D). The Army validated ARTEP individual supporting tasks for FST enlisted personnel are listed in Appendix E and prefixed by a small caps bold letter (**a**). In addition, Appendix E lists by health care provider MOS, the individual supporting soldier tasks developed for the pilot. The individual supporting soldier tasks for FST General and Orthopedic Surgeons were initiated by members of the Combat Trauma Surgical Committee. The individual supporting soldier tasks for nursing personnel (CRNA, RN, LVN, EMT and OR Technician) were initiated by the Department of Nursing at Brooke Army Medical Center.

Completion of a task was documented when the task was performed within the scope of practice of the provider and that performance met BTGH clinical standards. The mean percent of pilot-developed CTST individual supporting soldier tasks completed for each MOS is listed below in Table 4.

Table 4

MOS	%	MOS	%
61J General Surgeons	72	61M Orthopedic Surgeon	64
66F Nurse Anesthetists	48	66H8A Critical Care Nurse	70
66E Operating Room Nurse	25	66H Emergency Room Nurse	59
91C Licensed Vocational Nurses	58	91D OR Technicians	29
91B Emergency Medical Technicians	47		

There are currently no Army training standards to compare these rates of task completion with. In fact, the tasks themselves (with the exception of the enlisted ARTEP individual tasks) are not validated outside of the pilot study. The purpose of developing the individual supporting soldier task lists for each FST provider MOS was to provide a template for validation and standardization with subsequent CTST rotations of FSTs.

The rate of task completion of the enlisted Army validated ARTEP individual supporting soldier tasks is relevant to measure whether the pilot met its individual training objectives for FST personnel. The mean percent of ARTEP individual supporting soldier tasks completed for each enlisted MOS is listed in Table 5.

Table 5

MOS	% of ARTEP Tasks Performed
91C Licensed Vocational Nurses	82
91D OR Technicians	69
91B Emergency Medical Technicians	57

For the purposes of the CTST pilot, the enlisted personnel did not purposely attempt to complete as many of their individual supporting soldier training tasks as possible. Instead, the pilot wished to measure how many of the individual training tasks would be completed with a month of CTST training at BTGH while the enlisted personnel performed their daily BTGH trauma patient care duties. However, the potential availability for maximizing enlisted ARTEP individual task training is indicated by how many of the ARTEP tasks the enlisted personnel were exposed to during their CTST at BTGH. The mean percent of ARTEP individual supporting soldier tasks the enlisted personnel were exposed to at BTGH follows is listed below in Table 6.

Table 6

MOS	% of ARTEP Task Exposure
91C Licensed Vocational Nurses	94
91D OR Technicians	79
91B Emergency Medical Technicians	71

Of course, the numerical recording of the training tasks or cases completed does not ensure adequate individual supporting soldier training even if it meets Army recognized quantitative standards. The completed individual tasks must also meet recognized qualitative standards. For medical-legal reasons the CTST individual training tasks or cases performed had to meet BTGH clinical quality standards for technical proficiency, appropriateness, timeliness, and efficiency. As trauma team leaders, the three CTST General Surgeons were evaluated using daily morning reports, weekly morbidity and mortality conferences, and end of rotation BTGH staff evaluations. At the conclusion of the pilot, the BTGH summary staff evaluations concluded the trauma knowledge, team leadership, decision-making, technical skills (i.e., their individual supporting soldier tasks), and intensive care expertise of the three CTST General Surgeons met BTGH trauma service standards. The FST Orthopedic Surgeon was informally followed by the BTGH orthopedic staff and judged to have met all quality of care standards in patient

management and the technical performance of individual supporting soldier tasks. The quality of anesthesia care rendered by the FST CRNAs was monitored by BTGH staff anesthesiologists and judged to have met all quality of care standards in patient management and the technical performance of individual supporting soldier tasks. The quality of nursing care provided by the FST nursing personnel was monitored by their BTGH nursing supervisors and never engendered a quality concern over the management of a patient or the technical performance of an individual supporting soldier task.

b. The FST conducted adequate team training in its surgical collective tasks.

The culminating CTST event occurred during the last week of the CTST pilot study. For six consecutive 12 hour night shifts, every member of the FST conducted simultaneous collective and unit training (using BTGH trauma protocols and under BTGH supervision). Major trauma (particularly penetrating trauma) cases were preferentially referred to the FST personnel. The patients were cared for in a linear fashion similar to how the FST would process combat casualties.

Two 91B EMTs were stationed with the Houston Emergency Medical System (H-EMS) to respond to major trauma calls. The EMTs conducted pre-hospital stabilization and transport care and joined an Army resuscitation team in the BTGH emergency center (EC) to resuscitate the patient. The performance the 91Bs in their pre-hospital duties were evaluated on an individual clinical basis by their H-EMS supervisors. The 91Bs performance as resuscitation team members in the BTGH EC were collectively evaluated with the other FST personnel.

Two Army resuscitation teams were on duty in the EC. A 61J General Surgeon working out of the EC supervised the two teams. One team consisted of a 66H ER Nurse, a 91B EMT, and a 91C LVN. The second team consisted of a 66F Nurse Anesthetist, a 91B EMT, and a 91D OR Technician. The Orthopedic Surgeon provided EC resuscitation assistance and orthopedic care to the FST trauma patients.

Patients that required operative intervention were referred to the 61J General Surgeon on inpatient call for that day. The patient was preferentially taken to an OR room staffed by FST personnel (to include the remaining Nurse Anesthetist, the 66E OR Nurse, and the two remaining 91D OR Technicians).

Post-operative patients were preferentially referred to an Army Critical Care team for recovery and ICU monitoring. The Critical Care Team consisted of the 66H8A Critical Care Nurse and the two remaining 91C LVNs.

During the final six days of unit-level CTST, team training of the FST in its three surgical collective tasks (i.e., provide preoperative services, perform surgical services, and provide postoperative services) was monitored and evaluated. Each morning all FST providers, as a team, underwent extensive after action review (AAR) of the comprehensive management of each major trauma case the FST cared for during the previous night.

However, the emphasis of the morning AAR sessions was placed on the Provide Preoperative Services (triage and resuscitation) collective task. This emphasis was felt warranted for two reasons: (1) the triage and resuscitation areas were considered most vulnerable to mass casualty overload at the level of the FST. (2) The CTST deficit in the Provide Preoperative Services collective task was judged greater. In peacetime, military surgical personnel provide surgery and post-operative team care on non-trauma patients daily. Military

team training in trauma triage and resuscitations is not commonly available in peacetime except through CTST.

For the Provide Preoperative Services collective task, videotape replays of the EC resuscitations were reviewed by the FST members and critiqued. To ensure the Army EC teams resuscitated the trauma patients appropriately and efficiently according to BTGH trauma protocols, the BTGH supervisors reviewed and critiqued the process of care provided by the FST resuscitation teams. Similarly, the FST OC evaluators were able to use the Provide Preoperative Services collective task checklist (provided in ARTEP 8-518-10-MTP) to ensure the resuscitations met Army Training and Evaluation Program (ARTEP) standards.

Based on the AAR sessions, both BTGH and OC evaluators concluded the resuscitation, operative, and intensive care teams met the training standards for their respective surgical collective tasks during their week of team and unit-level CTST.

The American College of Surgeons (see "Resources for the Optimal Care of the Injured Patient") established standardized continuous quality audit filters to monitor the process of trauma care. For example, any patient with abdominal injuries and hypotension (systolic blood pressure < 90 mm Hg) who does not undergo laparotomy within one hour automatically generates a case review to assess the quality (i.e., appropriateness, timeliness, and efficiency) of care collectively provided by the trauma team. The records of patients treated by the FST, during its last week of collective and unit training, were screened by the BTGH Trauma Service Quality Management Office. The care provided by the FST did not violate any of the established quality audit filters for trauma care at BTGH. The use of the quality audit filter mechanism served to independently verify the collective tasks performed by the FST met quality standards for appropriateness, timeliness, and efficiency.

c. The FST conducted adequate unit training in its Perform Combat Support Operations METL task.

By doctrine (FM 8-10-25-TTP), the FST provides forward surgical support for up to 72 consecutive hours and stabilize up to 30 critically injured patients. For medical-legal purposes this intensity of training could not be performed at BTGH. However, during the final week of unit-level CTST, the FST did work six consecutive twelve-hour night shifts to approximate its FST mission. The FST, over 72 hours as a CTST unit, resuscitated 47 trauma patients in the emergency center and admitted 16 of these critically injured patients for primary operative repair or for intensive care stabilization. The FST met the Provide Preoperative Services 72 hour unit training goal by resuscitating over thirty (i.e., 47) trauma patients. However, the Provide Surgical and Postoperative Services 72 hour unit training goals were not met with only 16 of the 47 patients resuscitated requiring operative or intensive care stabilization. This training shortfall was predicated on the fact that during four of the six nights CTST unit training was conducted BTGH experienced an unusually low number of major trauma cases.

However, the salient fact remains the FST fully met the pilot's CTST training goals for unit training. The Great Plains Regional Medical Command personnel who developed the pilot study were convinced from the outset that effective CTST training must culminate in unit-level trauma patient care to improve unit surgical readiness. This pilot training objective was met by the FST. For six consecutive nights, CTST was conducted at the unit-level with all BTGH major trauma cases preferentially referred to the FST personnel. The patients were cared for in a linear fashion similar to how the FST would process combat casualties. The FST sequentially

conducted its three surgical collective tasks (i.e., to provide preoperative services, provide surgical services, and provide postoperative services) during the culminating event for the CTST rotation. The three surgical collective tasks were evaluated by BTGH and OC supervisors and the entire process of trauma patient care management conducted by the FST was judged to have met quality standards.

FM 8-10-25-TTP lists 56 patient casualty conditions that are suitable for battlefield care by an FST. These patient conditions are listed in Appendix A (of the Training Plan) under the "ICD-9 Coding of FST Patient Conditions" spreadsheet. These 56 patient conditions are composed of various combinations of 35 different single organ injuries listed in Appendix C (of the Training Plan) under the "Comprehensive listing of single organ injuries for FST Patient Conditions" worksheet. During the month of CTST the FST surgeons as a group surgically repaired, on one or multiple patients, 32 out of these 35 single organ injuries. The data indicated that the unit's overall operative training was conducted on a trauma surgery population with injuries suitable for care at the FST.

The only FST appropriate single organ injuries not treated over the course of the CTST were treatments for third degree burns and for traumatic amputations of one or both lower extremities. However, the CTST surgeons did perform several semi-elective lower extremity amputations for chronic conditions.

The FST Patient Conditions and Single Organ Injuries in the spreadsheets of Appendix A and C (of the Training Plan) were cross-referenced to the civilian standard used to record diagnostic classifications, the International Classification of Diseases (ICD-9). The purpose of developing this cross-referenced listing was to provide a template for a standardized reporting methodology that could be used to compare the potential trauma patient populations and operative experiences between CTST rotations at different civilian institutions. This information will be forwarded to the Defense Medical Readiness Training Institute to assist in the selection of additional civilian CTST sites.

d. The FST demonstrated the ability to obtain quality trauma outcomes (which met national trauma care standards) using BTGH trauma protocols to care for civilian trauma victims.

Though the role of the surgeon as the trauma team leader is unquestioned, it must be stressed that the role of the CTST surgeons in determining the outcome of the trauma patients they operated on was limited by several factors. First, the CTST surgeons were obligated, for obvious medical-legal reasons, to follow the trauma protocols of BTGH. Second, trauma care is a team effort with nurses, residents, other fellows, and attendings all having the ability to make critical decisions at given points in the course of a given patient's care. Nevertheless, for internal review purposes the ability of the three FST General Surgeons to achieve trauma survival outcomes which met national standards were analyzed. Only the outcomes of the 42 primary trauma patients the CTST General Surgeons operated on were examined.

The Trauma Score/Injury Severity Score (TRISS) methodology predicts the percent likelihood of trauma patient survival based on the factors of age, level of anatomic injury (Injury Severity Score), level of physiologic stability (Revised Trauma Score), and type of injury (blunt versus penetrating). The TRISS methodology (see "Resources for the Optimal Care of the Injured Patient") was used to predict the likelihood of survival for the CTST 42 primary trauma patients. For the CTST outcome analysis, two questions were asked. First, did any of the 42 patients have a TRISS predicted survival of greater than 50% and suffer an unexpected

mortality? Second, if so, did an in-depth case review conducted by BTGH Trauma Service indicate any substandard or inappropriate care by an FST General Surgeon (or other provider).

The internal review documented only one trauma case out of the 42 suffered an unexpected mortality (fatal outcome in the face of a predicted survival greater than 50%). The requisite in-depth case review conducted by the BTGH Trauma Service demonstrated no evidence of provider error or substandard care as the cause of the adverse outcome. Based on this data, it was concluded the outcomes of the 42 patients operated on by CTST General Surgeons met or exceeded national and BTGH quality standards.

e. The FST identified how BTGH trauma protocols will be modified for an FST environment to obtain optimal combat casualty results.

During the final unit-level CTST week, after action reviews (AAR) of every patient treated by the FST were conducted. The FST OCs used the AAR sessions to ensure the FST personnel identified how BTGH trauma protocols might have to be modified for the battlefield environment. The OCs led the discussion on each case to ensure military relevant lessons were learned from the FST's trauma experience at BTGH. Subjectively, the OC evaluators concluded this training objective was met based on their direct instruction and observation.

f. The FST became confident of its modified approach towards combat casualty care and that its level of CTST will obtain optimal combat casualty results.

The pre / post survey sought to document any change in the FST members degree of confidence to accomplish their battlefield mission (due to the CTST). The survey tool was developed with the assistance of subject matter experts within Brooke Army Medical Center's Department of Nursing Education and Staff Development. The survey tool was based on a 'general expectation of success' model where the respondents select the number that best indicates their opinion related to each question on a Likert scale.

At the conclusion of the pilot the data was entered into SPSS version 8.0 and verified by a second individual to avoid key punch data entry errors. Descriptive statistics and a one way analysis of variance (ANOVA) was performed to compare changes over time within groups and between groups of FST members by MOS. Due to the low number of team members the focus of this analysis was on the first and second components which involve all team members and yield the maximal possible N of 19 for this study. The statistical data consisting of descriptive statistics and ANOVA for the first two components of the Pre / Post Survey is available at Appendix H. The ANOVA of the individual and team components with the highest levels of significance are displayed in Table 6. These results are listed in descending order beginning with the most statistically significant. The questions with a \*\* are the ones based on team skills.

Table 7 (N = 19)

Question	Pre Test Mean	Post Test Mean	F	Sig
Trauma Care At FST**	3.32	4.47	13.96	0.001
Casualty Care At FST	3.42	4.58	13.00	0.001
Trauma Care At BAMC**	3.74	4.68	12.90	0.001
Trauma Care At BTGH**	3.47	4.53	12.86	0.001
Resuscitation At FST**	3.68	4.53	11.64	0.002
Resuscitation At FST	3.47	4.58	11.18	0.002
Resuscitation At BTGH	3.58	4.63	10.81	0.002
Resuscitation At BTGH**	3.89	4.63	10.19	0.003
Trauma Care At BTGH	3.84	4.68	9.11	0.005
Surgery At BTGH**	3.89	4.68	8.92	0.005
** indicates Team Skills				

This data demonstrated that the FST members recorded a marked improvement in their confidence to provide trauma care as a consequence of their CTST at BTGH. It was interesting to note after CTST that the FST members (as a team) felt more confident of their ability to provide trauma care at BTGH, at the Army Trauma Center (BAMC), or at the level of the FST on a battlefield. The authors had hypothesized that they would find a very slight, if any, change in confidence levels of these FST members as a result of CTST. Because the FST members were hand-selected from Army Trauma Centers (i.e., among the most trauma proficient Army providers available), it was anticipated they would have a very limited improvement in their trauma care confidence levels. The authors were surprised to see improved confidence levels with such statistical significance with an N limited to 19 pre-selected subjects.

The data indicated that the FST members had a clear and significant improvement in their confidence levels to perform trauma care including resuscitations and surgical care of the wounded soldier or beneficiary. The authors note that the statistical results will be much more powerful when additional teams complete their rotations and the study N is greater than 30.

#### 4. Conclusion:

The argument the authors made was that the FST members must meet validated Army training standards for individual training, collective training, and unit training while conducting CTST at BTGH. If the FST met these Army training standards while providing documented quality patient care at BTGH then the FST would know it had met both Army and BTGH trauma training standards. If the FST personnel could then decide how to adapt their BTGH protocols to the anticipated FST battlefield environment then they should be able to obtain optimal combat casualty results as well. Finally, armed with this CTST experience, the FST should be confident of their ability to provide trauma care on the battlefield. An FST that had met Army FST trauma training standards, civilian trauma training standards, and confidently knew how it was going to perform trauma care on the battlefield should have a high degree of surgical readiness. Based on the training analysis, the authors concluded that the six training objectives of the training plan were met and the unit's surgical readiness was maximized.

**APPENDIX A**  
**VOLUNTEER AGREEMENT**  
(Informed Consent for Release of Individual Information)

Dear Participant,

The perception exists among General Accounting Office (GAO) analysts, civilian trauma experts, and some military trauma experts that the level of peacetime trauma exposure for our surgical personnel is insufficient to ensure optimal trauma care outcomes in our soldiers who are wounded in action. As a result of these perceptions Congress directed the Department of Defense (DOD) to conduct a Combat Trauma Surgical Training (CTST) Demonstration Project at a Level I trauma center.

You are one of the soldiers selected to participate in a first ever experience of an entire Forward Surgical Team (FST) deploying to a civilian level I trauma facility to undergo the CTST Pilot Program at Ben Taub General Hospital in Houston Texas.

You are being asked to participate in the evaluation of this CTST program. Honest and-comprehensive evaluations are necessary to accurately measure the effectiveness of the training and to determine what changes need to be made to improve the overall program. Your assessment of the training value provided by the CTST program is critical. However, your participation in the research phase of this training is strictly voluntary. Please be advised that by answering and returning the attached questionnaire is consent on your part to be included in the research phase of this training. The initial survey should take about 60 minutes of your time to complete. The final survey should only take about 20 minutes at the end of the rotation, and during the final after action review in Houston. By answering these questions, you will enable us to determine which experiences are valuable and which experiences should be discontinued or changed to make them more useful. Again, this program cannot succeed without you and the research phase will be of little value without your vitally important input.

Colonel Conaway and Major Campbell are striving to evaluate the effectiveness of this training and to perform a cost benefit analysis on the pilot program. They will serve as the principal investigators and may be contacted at the following numbers: in BAMC, Colonel Conaway at 916-0266 and Major Campbell at 916-2088, in Houston, Colonel Conaway 713-794-2790 and Major Campbell at 713-794-2789. Both Colonel Conaway and Major Campbell will be using the survey data as part of their required Graduate Management Project for completion of the U. S. Army-Baylor University Graduate Program in Healthcare Administration.

Please also understand that you will not be identified on the questionnaire except by a code number. These code numbers will be kept in a secured log available only to the principal investigators. This secure log will be for the purpose of clarifying responses on the questionnaire or following up in any manner that may be necessary. The collected data, when reported to the command or published in scientific journals will be identified as aggregate data. No one but you should be able to identify your responses.

The surveys and data collection will be completed in three phases. The first phase is the Initial Survey which you are being asked to complete between now and 31 August 1998. The second phase will occur while you are training at BTGH. This second phase will involve your daily use of a simple spreadsheet to track the supporting soldier tasks that you performed, assisted or observed as well as the time you spent on each. The third and final phase will be the Final Survey which will be provided to you at the final after action review in Houston. Please read the next page titled as the Initial Survey. This section will provide you information on the CTST, the Forward Surgical Team and the situation. Please read it carefully and then complete



**APPENDIX A**  
**VOLUNTEER AGREEMENT**  
(Informed Consent for Release of Individual Information)

the Training History sheet followed by the MOS specific sheets. Again, it is critical that you bring this completed form with you to Houston on the 31<sup>st</sup> of August.

If you would like a copy of the survey results please fill out the attached index card with you name and full address and submit it to Major Campbell.

Colonel Conaway and Major Campbell both greatly appreciate the time and thoughtful consideration that you give in completing these surveys.

/original signed/  
CASS W. CONAWAY  
COL, MC  
CTST Commander

/original signed/  
KYLE D. CAMPBELL  
MAJ, MS  
CTST XO

**APPENDIX B**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

**Initial Survey Scenario**

The purpose of CTST is to improve your individual and collective skills in the management of trauma patients. Furthermore, CTST is to improve your approach and confidence in caring for trauma patients. Ultimately, the military value of CTST is for you to be able to provide better care for our combat casualties. Your assessment of the training value provided by CTST is important to define the overall training benefit of the program. This initial survey will establish your baseline for trauma training.

Assume you and your team members are fully trained with your FST equipment and have conducted moulage casualty trauma drills at the FST. As an FST trauma team, you have never conducted real world trauma care at your military treatment center or in combat. Potentially, your FST could be deployed as the only unit with surgical capability at a joint casualty collecting point (containing medical company elements which can provide first aid and ATLS support). Your FST will have surgical support two hours to the rear. Your joint casualty collecting point will have a high probability of seeing up to 100 casualties in 24 hours with 10 to 15 of these casualties having life or limb threatening conditions.

You have been provided with sections of the Army manual, Employment of Forward Surgical Teams (FST). Review the manual so you will understand the environment, limitations, and responsibilities of providing trauma care to our combat casualties at the level of the FST. After reading the manual, answer the survey from the perspective of a military health care provider assessing their ability to provide "optimal" trauma patient care. For the purposes of this survey, "optimal" care is defined as the highest standard of quality patient care possible under the tactical, environmental, equipment, and support limitations you are functioning in. It is understood that care at the level of the FST will not necessarily allow for trauma outcomes that are comparable to the best results at Level I trauma centers. However, with your current level of individual and team trauma skills, will you be able to obtain the best achievable outcomes ("optimal") for your patients whether you are at a Level 1 trauma center or an FST?

NOTE: For the survey, you are not assessing the adequacy of the FST equipment. You are assessing your ability to function as a trauma care giver.

The survey will consist of a section for your training history plus a section of survey questions. The survey questions will ask you to circle the response that best describes your degree of agreement with the statement. You will be able to choose a degree of agreement ranging from strongly disagree to strongly agree. Please take the time to read each question carefully before responding.

**APPENDIX C**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

**Training History**

Codebook # \_\_\_\_\_

1. It has been \_\_\_\_\_ years since I finished my MOS / AOC / residency training.
2. Since my MOS / AOC / residency training I have worked \_\_\_\_\_ years in a Level 1 or Level 2 trauma center providing care to trauma patients.
3. I currently work in a Level 1 or 2 trauma center providing care to trauma patients.  
(Circle one)
- Yes    No**

4. I have participated in and provided patient care during a **REAL** mass casualty event in a fixed facility such as a MEDCEN or MEDDAC.  
(Circle one)
- Yes    No**

Describe the event and your role:

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5. I have participated in and provided patient care during a military deployment involving mass combat casualties.  
(Circle one)

**Yes    No**

Describe the:

deployment

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event

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unit (i.e. FST, Battalion Aid Station etc.)

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---

your role

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APPENDIX D  
PRE / POST CTST SURVEY

Please answer the following questions based on the information in the Initial Survey sheet. Assume you are a current member of a Forward Surgical Team (FST). Answer all questions from YOUR perspective (based on your MOS and recent experiences / training)					
Circle the number that best indicates your opinion in response to the corresponding question. Circle 1 if you Strongly Disagree (SD), Circle 2 if you Disagree (D), Circle 3 if you Neither Agree nor Disagree (NAD), Circle 4 if you Agree (A) and Circle 5 if you Strongly Agree (SA)					
Codebook # _____					
Q #	Question	SD	D	NAD	A SA
<b>Individual Skills</b>					
1	My military peacetime patient care duties adequately prepared me to provide optimal trauma care in a Level I civilian trauma center such as Ben Taub General Hospital (BTGH).	1	2	3	4 5
2	My military peacetime patient care duties adequately prepared me to provide optimal combat casualty care at the level of the Forward Surgical Team (FST).	1	2	3	4 5
3	Overall, I am confident of my individual skills required to perform my patient care tasks for trauma patients in a Level I military trauma center such as BAMC.	1	2	3	4 5
4	Overall, I am confident of my individual skills required to perform my patient care tasks for trauma patients at BTGH.	1	2	3	4 5
5	Overall, I am confident of my individual skills required to perform my patient care tasks for conventional combat casualties in a field environment while assigned to a FST.	1	2	3	4 5
6	I am confident of my ability to be an effective member of a trauma team resuscitating trauma victims upon their arrival at BAMC.	1	2	3	4 5
7	I am confident of my ability to be an effective member of a trauma team resuscitating trauma victims upon their arrival at BTGH.	1	2	3	4 5
8	I am confident of my ability to be an effective member of a trauma team resuscitating combat casualties upon their arrival at a FST.	1	2	3	4 5

APPENDIX D  
PRE / POST CTST SURVEY

Codebook # _____						
Q #	Question	SD	D	NAD	A	SA
<b>Team Skills</b>						
9	The military peacetime patient care duties of the FST members prepared them adequately to provide optimal trauma care, as a team, at BAMC.	1	2	3	4	5
10	The military peacetime patient care duties of the FST members prepared them adequately to provide optimal trauma care, as a team, at BTGH.	1	2	3	4	5
11	The military peacetime patient care duties of the FST members prepared them adequately to provide optimal trauma care, as a team, at the level of the FST.	1	2	3	4	5
12	I am confident of the ability of the FST to function as an effective trauma team caring for trauma victims at BAMC.	1	2	3	4	5
13	I am confident of the ability of the FST to function as an effective trauma team caring for trauma victims at BTGH.	1	2	3	4	5
14	I am confident of the ability of the FST to function as an effective trauma team caring for combat casualties at the level of the FST.	1	2	3	4	5
15	I am confident of the ability of the FST to perform triage necessary for trauma victims at BAMC.	1	2	3	4	5
16	I am confident of the ability of the FST to perform triage necessary for trauma victims at BTGH.	1	2	3	4	5
17	I am confident of the ability of the FST to perform triage necessary for combat casualties at the level of the FST.	1	2	3	4	5
18	I am confident of the ability of the FST to perform resuscitation necessary for trauma victims at BAMC.	1	2	3	4	5
19	I am confident of the ability of the FST to perform resuscitation necessary for trauma victims at BTGH.	1	2	3	4	5
20	I am confident of the ability of the FST to perform resuscitation necessary for combat casualties at the level of the FST.	1	2	3	4	5
21	I am confident of the ability of the FST to perform surgery necessary for trauma victims at BAMC.	1	2	3	4	5
22	I am confident of the ability of the FST to perform surgery necessary for trauma victims at BTGH.	1	2	3	4	5
23	I am confident of the ability of the FST to perform surgery necessary for combat casualty care at the level of the FST.	1	2	3	4	5
24	I am confident of the ability of the FST to perform post-operative / intensive care necessary for trauma victims at BAMC.	1	2	3	4	5
25	I am confident of the ability of the FST to perform post-operative / intensive care necessary for trauma victims at BTGH.	1	2	3	4	5
26	I am confident of the ability of the FST to perform post-operative / intensive care necessary for combat casualty care at the level of the FST.	1	2	3	4	5

APPENDIX D  
PRE / POST CTST SURVEY

Codebook # _____						
Q #	Question	SD	D	NAD	A	SA
<b>Physician Combined (61J and 61M)</b>						
I am confident of my ability to assume command and control of triage to include:						
27	triage of patients	1	2	3	4	5
28	prioritizing of resuscitations	1	2	3	4	5
29	prioritizing of surgery	1	2	3	4	5
30	prioritizing limited blood products	1	2	3	4	5
31	prioritizing evacuation	1	2	3	4	5
I am confident of my ability to:						
32	triage patients (sort the patients).	1	2	3	4	5
33	resuscitate trauma victims.	1	2	3	4	5
34	care for severe burn injuries.	1	2	3	4	5
35	provide initial stabilization of a complex fracture.	1	2	3	4	5
36	place an external fixator for a long bone fracture.	1	2	3	4	5
37	immobilize an unstable pelvic fracture.	1	2	3	4	5
38	provide critical care.	1	2	3	4	5
39	manage a ventilator dependent patient.	1	2	3	4	5
40	manage a patient on vasoactive medications.	1	2	3	4	5
<b>61J (only)</b>						
I am confident of my ability to:						
41	perform a trauma laparotomy.	1	2	3	4	5
42	perform a trauma thoracotomy.	1	2	3	4	5
43	repair vascular injuries.	1	2	3	4	5
44	decompress an epi/subdural hematoma.	1	2	3	4	5
<b>61M (only)</b>						
I am confident of my ability to:						
45	assist the FST General Surgeons on operative trauma cases.	1	2	3	4	5
46	immobilize suspected spine injuries.	1	2	3	4	5

APPENDIX D  
PRE / POST CTST SURVEY

	Codebook # _____					
Q #	Question	SD	D	NAD	A	SA
	Combined Nursing Questions (All Nursing MOS's)					
	I am confident that I can <b>assess</b> trauma patients needs for:					
47	airway management	1	2	3	4	5
48	ventilation	1	2	3	4	5
49	pain control	1	2	3	4	5
50	volume resuscitation	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:					
51	emergency airway management	1	2	3	4	5
52	ventilation	1	2	3	4	5
53	pain control	1	2	3	4	5
54	volume resuscitation	1	2	3	4	5
55	I am confident that I can establish large bore IV's in the trauma patient.	1	2	3	4	5
	I am confident that, in the ICU setting, I can <b>assess</b> the postoperative trauma patients needs for:					
56	ventilation	1	2	3	4	5
57	volume therapy	1	2	3	4	5
58	pain control	1	2	3	4	5
	I am confident that I can <b>provide</b> postoperative care, in the ICU setting, for trauma patients requiring:					
59	ventilation	1	2	3	4	5
60	volume replacement	1	2	3	4	5
61	pain control	1	2	3	4	5
	I am confident in my ability to:					
62	document assessment and care of trauma patients.	1	2	3	4	5
63	provide emotional support to trauma patients.	1	2	3	4	5
64	identify a pneumo thorax in trauma patients.	1	2	3	4	5
65	identify a hemo thorax in trauma patients.	1	2	3	4	5
66	perform needle decompression thoracentesis.	1	2	3	4	5

APPENDIX D  
PRE / POST CTST SURVEY

Codebook # _____	SD	D	NAD	A	SA
Q #	Question				
<b>66F (only)</b>					
	I am confident that I can <b>assess</b> trauma patients needs for:				
67	1	2	3	4	5
68	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:				
69	1	2	3	4	5
70	1	2	3	4	5
71	1	2	3	4	5
72	1	2	3	4	5
73	1	2	3	4	5
74	1	2	3	4	5
<b>66H (only)</b>					
	I am confident that I can <b>assess</b> trauma patients needs for:				
75	1	2	3	4	5
76	1	2	3	4	5
77	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:				
78	1	2	3	4	5
79	1	2	3	4	5
80	1	2	3	4	5
81	1	2	3	4	5
82	1	2	3	4	5
<b>66E (only)</b>					
	I am confident that I can <b>assess</b> trauma patients needs for:				
83	1	2	3	4	5
84	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:				
85	1	2	3	4	5
86	1	2	3	4	5
87	1	2	3	4	5
88	1	2	3	4	5



APPENDIX D  
PRE / POST CTST SURVEY

	Codebook # _____					
Q #	Question	SD	D	NAD	A	SA
	<b>91C (only)</b>					
	I am confident that I can <b>assess</b> trauma patients needs for:					
89	pre-operative nursing care.	1	2	3	4	5
90	post-operative nursing care.	1	2	3	4	5
91	emergency drug administration	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:					
92	pre-operative nursing care	1	2	3	4	5
93	post-operative nursing care	1	2	3	4	5
94	emergency drug administration	1	2	3	4	5
95	I am confident that, in the ICU setting, I can <b>assess</b> the postoperative trauma patients needs for emergency drug administration	1	2	3	4	5
96	I am confident that I can <b>provide</b> postoperative care, in the ICU setting, for trauma patients requiring emergency drug administration	1	2	3	4	5
	<b>91D (only)</b>					
97	I am confident that I can <b>assess</b> trauma patients needs for perioperative nursing care	1	2	3	4	5
98	I am confident that I can <b>treat</b> trauma patients in situations involving perioperative nursing care	1	2	3	4	5
	<b>91B (only)</b>					
	I am confident that I can <b>assess</b> trauma patients needs for:					
99	pre-operative nursing care.	1	2	3	4	5
100	post-operative nursing care.	1	2	3	4	5
	I am confident that I can <b>treat</b> trauma patients in situations involving:					
101	pre-operative nursing care	1	2	3	4	5
102	post-operative nursing care	1	2	3	4	5

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	
Supporting Soldier Tasks	Date Task Completed (XX Sep 98)
<b>Pre-op Services</b>	
<b>(Triage)</b>	
Assume command & control of triage	
Coordinate care with nursing OIC	
Identify life & limb threatening injuries	
Establish triage categories	
Prioritize resuscitation	
Prioritize surgery	
Prioritize resources (blood)	
<b>(Resuscitation)</b>	
Conduct ATLS primary survey	
Immobilize suspected spine injuries	
Assess airway	
Clear airway	
OP/NP airway	
OT/NT intubation	
Assess ventilation	
Assess acute inhalation injury	
Mouth ventilation	
Bag ventilation	
Seal open chest wound	
Recognize pulmonary blast injury	
Differentiate shock etiologies	
Determine class of hemorrhagic shock	
Perform fluid resuscitation	
Administer blood transfusions	
Use tourniquet	
Nasogastric intubation	
Placement urinary catheter	
Assess neurologic status (Glasgow coma scale)	
Recognize signs of epidural/subdural hematoma	
Conduct ATLS secondary survey	
Immobilize long bone fractures	
Immobilize unstable pelvic fracture	
Identify suspected major vascular injuries	
Identify suspected compartment syndromes	
Establish degree and percent body burns	
Dress burn wounds	

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	
Supporting Soldier Tasks	Date Task Completed (XX Sep 98)
Identify and dress ocular injuries	
<b>Surgical Services</b>	
<b>All aspects</b>	
Coordinate care with nursing OIC	
Coordinate care with nurse anesthetist	
<b>Skin &amp; soft tissue</b>	
Wound debridement & management	
Burn wound management/escharotomy	
Application casts and splints	
<b>Post-op Services</b>	
Coordinate care with nursing OIC	
Manage post-operative care	
Manage spine injuries	
Manage closed head injury	
Manage cardiac contusion	
Manage pulmonary contusion/flail chest	
Manage inhalation injury	
Manage severe burn injury	
Manage closed pelvic/femur fracture	

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Date _____	Codebook _____	Place the number of iterations of each case in the appropriate block			
Trauma Case Log		Staff	Surgeon	1st Assist	2nd Assist
<b>Resuscitation Procedures</b>					
Lead resuscitation team					
Cricothyrotomy					
Needle decompression thoracentesis					
Chest tube thoracostomy					
Pericardiocentesis					
Diagnostic peritoneal lavage					
<b>Surgical Procedures</b>					
<b>Skin &amp; soft tissue</b>					
Wound debridement & management					
Burn wound management/escharotomy					
<b>Head &amp; Neck</b>					
<i>Reduction of maxillary fracture</i>					
Repair scalp laceration					
Nasal packing					
Tracheostomy					
<i>Neck exploration for trauma</i>					
<i>Esophageal repair</i>					
<i>Drain epi/subdural hematoma</i>					
<b>Abdominal</b>					
Diaphragm repair					
<i>Gastric repair</i>					
<i>Duodenal repair</i>					
<i>Small bowel repair</i>					
<i>Colon/rectal repair</i>					
<i>Splenectomy/splenorrhaphy</i>					
<i>Repair and drain hepatic laceration</i>					
Damage control laparotomy					
<i>Pancreatic repair/resection</i>					
<i>Nephrectomy/nephrorraphy</i>					
<i>Ureteral repair</i>					
<i>Bladder repair</i>					
<b>Thoracic</b>					
<i>Exploratory Thoracoscopy</i>					
Pericardial window					
<i>Repair cardiac injury</i>					
<i>Thoracotomy--chest wall repair</i>					

*Italics indicates RRC index cases*

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Date _____	Codebook _____	Place the number of iterations of each case in the appropriate block			
Trauma Case Log		Staff	Surgeon	1st Assist	2nd Assist
<i>Thoracotomy--esophageal repair</i>					
<i>Thoracotomy--tracheobronchial repair</i>					
<i>Thoracotomy--lung resection</i>					
<b>Extremity</b>					
<i>Replantation</i>					
<i>Fasciotomies upper &amp; lower extremity</i>					
<i>Amputation upper &amp; lower extremity</i>					
<i>Open fracture reduction</i>					
<i>External fixation</i>					
<i>Identify and stabilize nerve and tendon injuries</i>					
<i>Open joint management</i>					
<b>Vascular</b>					
<i>Repair carotid / neck vessel</i>					
<i>Repair thoracic aorta / innominate</i>					
<i>Repair abdominal aorta/vena cava</i>					
<i>Repair peripheral vessel</i>					
<i>Other vascular repair / shunt</i>					
<b>Intensive Care Cases</b>					
<i>Non-operative ICU admission over 48 hours</i>					
<b>Other Procedures / Cases</b>					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

*Italics indicates RRC index cases*

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	
Supporting Soldier Tasks	Date Task Completed (XX Sep 98)
<b>Pre-op Services</b>	
<b>(Triage)</b>	
Assume command & control of triage	
Coordinate care with nursing OIC	
Identify life & limb threatening injuries	
Establish triage categories	
Prioritize resuscitation	
Prioritize surgery	
Prioritize resources (blood)	
<b>(Resuscitation)</b>	
Conduct ATLS primary survey	
Immobilize suspected spine injuries	
Assess airway	
Clear airway	
OP/NP airway	
OT/NT intubation	
Assess ventilation	
Assess acute inhalation injury	
Mouth ventilation	
Bag ventilation	
Seal open chest wound	
Recognize pulmonary blast injury	
Differentiate shock etiologies	
Determine class of hemorrhagic shock	
Perform fluid resuscitation	
Administer blood transfusions	
Use tourniquet	
Nasogastric intubation	
Placement urinary catheter	
Assess neurologic status (Glasgow coma scale)	
Recognize signs of epidural/subdural hematoma	
Conduct ATLS secondary survey	
Immobilize long bone fractures	
Immobilize unstable pelvic fracture	
Identify suspected major vascular injuries	
Identify suspected compartment syndromes	
Establish degree and percent body burns	
Dress burn wounds	

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	
<b>Supporting Soldier Tasks</b>	<b>Date Task Completed (XX Sep 98)</b>
Identify and dress ocular injuries	
<b>Surgical Services</b>	
<b>All aspects</b>	
Coordinate care with nursing OIC	
Coordinate care with nurse anesthetist	
<b>Skin &amp; soft tissue</b>	
Wound debridement & management	
Burn wound management/escharotomy	
Application casts and splints	
<b>Post-op Services</b>	
Coordinate care with nursing OIC	
Manage post-operative care	
Manage spine injuries	
Manage closed head injury	
Manage cardiac contusion	
Manage pulmonary contusion/flail chest	
Manage inhalation injury	
Manage severe burn injury	
Manage closed pelvic/femur fracture	

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Date _____ Codebook _____	Place the number of iterations of each case in the appropriate block			
Trauma Case Log	Staff	Surgeon	1st Assist	2nd Assist
<b>Resuscitation Procedures</b>				
Lead resuscitation team				
Cricothyrotomy				
Needle decompression thoracentesis				
Chest tube thoracostomy				
Pericardiocentesis				
Diagnostic peritoneal lavage				
<b>Surgical Procedures</b>				
<b>Skin &amp; soft tissue</b>				
Wound debridement & management				
Burn wound management/escharotomy				
<b>Head &amp; Neck</b>				
<i>Reduction of maxillary fracture</i>				
Repair scalp laceration				
Nasal packing				
Tracheostomy				
<i>Neck exploration for trauma</i>				
<i>Esophageal repair</i>				
<i>Drain epi/subdural hematoma</i>				
<b>Abdominal</b>				
Diaphragm repair				
<i>Gastric repair</i>				
<i>Duodenal repair</i>				
<i>Small bowel repair</i>				
<i>Colon/rectal repair</i>				
<i>Splenectomy/splenorrhaphy</i>				
<i>Repair and drain hepatic laceration</i>				
<i>Damage control laparotomy</i>				
<i>Pancreatic repair/resection</i>				
<i>Nephrectomy/nephrorraphy</i>				
<i>Ureteral repair</i>				
<i>Bladder repair</i>				
<b>Thoracic</b>				
<i>Exploratory Thoracoscopy</i>				
<i>Pericardial window</i>				
<i>Repair cardiac injury</i>				
<i>Thoracotomy--chest wall repair</i>				



APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Date _____ Codebook _____	Place the number of iterations of each case in the appropriate block			
Trauma Case Log	Staff	Surgeon	1st Assist	2nd Assist
<i>Thoracotomy--esophageal repair</i>				
<i>Thoracotomy--tracheobronchial repair</i>				
<i>Thoracotomy--lung resection</i>				
<b>Extremity</b>				
<i>Replantation</i>				
<i>Fasciotomies upper &amp; lower extremity</i>				
<i>Amputation upper &amp; lower extremity</i>				
<i>Open fracture reduction</i>				
<i>External fixation</i>				
<i>Identify and stabilize nerve and tendon injuries</i>				
<i>Open joint management</i>				
<b>Vascular</b>				
<i>Repair carotid / neck vessel</i>				
<i>Repair thoracic aorta / innominate</i>				
<i>Repair abdominal aorta/vena cava</i>				
<i>Repair peripheral vessel</i>				
<i>Other vascular repair / shunt</i>				
<b>Intensive Care Cases</b>				
<i>Non-operative ICU admission over 48 hours</i>				
<b>Ortho RRC Index Cases / Other Procedures / Cases</b>				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

*Italics indicates RRC index cases*

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Pre-op Services</b>							
<b>(Triage)</b>							
Assume command & control of triage							
Coordinate care with nursing OIC							
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>							
Identify life & limb threatening injuries							
Establish triage categories							
Prioritize resuscitation							
Prioritize surgery							
Prioritize resources (blood)							
<i>Prioritize evacuation</i>							
<b>(Resuscitation)</b>							
Lead resuscitation team							
Conduct ATLS primary survey							
Immobilize suspected spine injuries							
Assess airway							
Clear airway							
OP/NP airway							
Emergency OT/NT intubation							
Manage traumatic airway							
Manage burned airway							
Cricothyroidotomy							
Assess ventilation							
Assess acute inhalation injury							
Mouth ventilation							
Bag ventilation							
Seal open chest wound							
Needle decompression thoracentesis							
Chest tube thoracostomy							
Pericardiocentesis							
Manage chest tube drainage system							
<i>Recognize pulmonary blast injury</i>							
Differentiate shock etiologies							
Determine class of hemorrhagic shock							
Start large bore IV							
Start central IV							
Perform fluid resuscitation							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Administer blood transfusions							
Use of Level I Infusor							
<i>Use pneumatic antishock garment</i>							
Use tourniquet							
Nasogastric intubation							
Place urinary catheter							
Diagnostic peritoneal lavage							
Assess neurologic status (Glasgow coma scale)							
Recognize signs of epidural/subdural hematoma							
Conduct ATLS secondary survey							
Immobilize long bone fractures							
Immobilize unstable pelvic fracture							
Identify suspected major vascular injuries							
Identify suspected compartment syndromes							
<i>Saline dress white phosphorus wounds</i>							
Establish degree and percent body burns							
<i>Manage cold injuries</i>							
<i>Manage hypothermia</i>							
Dress burn wounds							
Identify and dress ocular injuries							
Assessment of acute trauma patients							
Assess and treat pain							
Acute pain control							
Emergency drug administration							
Assess and treat psychosocial needs							
<b>Surgical Services</b>							
<b>All aspects</b>							
Coordinate care with surgeon							
Provide general anesthesia							
Provide regional anesthesia							
Preoperative assessment of trauma patients							
<b>Skin &amp; Soft Tissue</b>							
Anesthesia for wound debridement							
Anesthesia for burn wound treatment and escharotomy							
Anesthesia for white phosphorus wound care							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Head and Neck</b>							
Anesthesia for repair scalp laceration							
Anesthesia for nasal packing							
Anesthesia for tracheostomy							
Anesthesia for neck exploration							
Anesthesia for carotid repair							
Anesthesia for esophageal repair							
Anesthesia for drain epi/subdural hematoma							
<b>Abdominal</b>							
Anesthesia for diaphragm repair							
Anesthesia for gastric repair							
Anesthesia for duodenal repair							
Anesthesia for small bowel repair							
Anesthesia for colon/rectal repair							
Anesthesia for splenectomy/splenorrhaphy							
Anesthesia for repair and drain hepatic laceration							
Anesthesia for damage control laparotomy							
Anesthesia for pancreatic repair/resection							
Anesthesia for nephrectomy/nephrorraphy							
Anesthesia for ureteral repair							
Anesthesia for bladder repair							
Anesthesia for repair abdominal aorta/vena cava							
<b>Thoracic</b>							
Anesthesia for pericardial window							
Anesthesia for repair cardiac injury							
Anesthesia for thoracotomy--chest wall repair							
Anesthesia for thoracotomy--esophageal repair							
Anesthesia for thoracotomy--tracheobronchal repair							
Anesthesia for thoracotomy--lung resection							
<b>Extremity</b>							
Anesthesia for vascular repair/shunt							
Anesthesia for fasciotomies upper & lower extremity							
Anesthesia for amputation upper & lower extremity							
Anesthesia for open fracture management							
Anesthesia for external fixation							
Anesthesia for ID and stabilize nerve and tendon injuries							
Anesthesia for open joint management							

## APPENDIX E

## TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____								
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>									
Supporting Soldier Tasks	P	Time	A	Time	O	Time			
Anesthesia for application casts and splints									
<b>Post-op Services</b>									
Coordinate care with team									
Manage post anesthesia care									
Manage postoperative ventilation									
Postoperative fluid management									
Postoperative pain management									
Manage central IV lines									
Provide large volume blood Infusions									
Acute pain control in the ICU patient									
Fluid management of burn patients									
Document assessment and care									
Document emotional support to trauma patients									
<b>General</b>									
Document assessment and care									
Document emotional support to trauma patients									

Clinical Issues

- How do you think your experiences today will help prepare you to be a contributing member of an FST treating combat trauma casualties?
  
  
  
  
  
- Compare and contrast your clinical experiences today with your clinical experiences at your home facility.

Basic Issues

- Identify any difficulties or problems you experienced today that the CDR / XO / Nursing OIC can correct.

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Pre-op Services</b>							
<b>(Triage)</b>							
Assume command & control of triage							
Coordinate care with team							
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>							
Identify life & limb threatening injuries							
Establish triage categories							
Prioritize resuscitation							
Prioritize surgery							
Prioritize resources (blood)							
<i>Prioritize evacuation</i>							
<b>(Resuscitation)</b>							
Lead resuscitation team							
Conduct ATLS primary survey							
Immobilize suspected spine injuries							
Assess airway							
Clear airway							
OP/NP airway							
Emergency OT/NT intubation							
Cricothyroidotomy							
Assess ventilation							
Assess acute inhalation injury							
Mouth ventilation							
Bag ventilation							
Seal open chest wound							
Identification of pneumo/hemo thorax							
Needle decompression thoracentesis							
Chest tube thoracostomy							
<i>Recognize pulmonary blast injury</i>							
Differentiate shock etiologies							
Determine class of hemorrhagic shock							
Start large bore IV							
Use of Level I Infusor							
Perform fluid resuscitation							
Administer blood transfusions							
<i>Use pneumatic antishock garment</i>							
Pericardiocentesis							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Use tourniquet							
Nasogastric intubation							
Place urinary catheter							
Diagnostic peritoneal lavage							
Assess neurologic status (Glasgow coma scale)							
Recognize signs of epidural/subdural hematoma							
Conduct ATLS secondary survey							
Immobilize long bone fractures							
Immobilize unstable pelvic fracture							
Identify suspected major vascular injuries							
Identify suspected compartment syndromes							
<i>Saline dress white phosphorus wounds</i>							
Establish degree and percent body burns							
Dress burn wounds							
<i>Nursing care of cold injuries</i>							
<i>Nursing care of hypothermia</i>							
Identify and dress ocular injuries							
Assess and treat pain							
Acute pain control							
Manage chest tube drainage system							
Emergency drug administration							
Assess and treat psychosocial needs							
<b>Surgical Services</b>							
Coordinate care with surgeon							
Coordinate care with nurse anesthetist							
Manage surgical setup, scrub and circulate							
<b>Post-op Services</b>							
Coordinate care with team							
Provide nursing postoperative care							
Nursing care of postoperative ventilation							
Nursing care of spine injuries							
Nursing care of closed head injury							
Nursing care of cardiac contusion							
Nursing care of pulmonary contusion/flail chest							
Nursing care of inhalation injury							

## APPENDIX E

### TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Nursing care of severe burn injury							
Nursing care of primary blast injury							
Nursing care of closed pelvic/femur fracture							
Nursing care of profound hypothermia							
Manage central IV lines							
Provide large volume blood infusions							
Acute pain control in the ICU patient							
<b>General</b>							
Document assessment and care							
Document emotional support to trauma patients							

**Clinical Issues -**

- How do you think your experiences today will help prepare you to be a contributing member of an FST treating combat trauma casualties?
  
  
  
  
  
- Compare and contrast your clinical experiences today with your clinical experiences at your home facility.

**Basic Issues**

- Identify any difficulties or problems you experienced today that the CDR / XO / Nursing OIC can correct.



APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____ Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>						
Supporting Soldier Tasks	P	Time	A	Time	O	Time
<b>Pre-op Services</b>						
<b>(Triage)</b>						
Coordinate care with team						
Assume command & control of triage						
Coordinate care with nursing OIC						
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>						
Identify life & limb threatening injuries						
Establish triage categories						
Prioritize resuscitation						
Prioritize resources (blood)						
Prioritize surgery						
<i>Prioritize evacuation</i>						
<b>(Resuscitation)</b>						
Lead resuscitation team						
Conduct ATLS primary survey						
Immobilize suspected spine injuries						
Assess airway						
Clear airway						
OP/NP airway						
OT/NT intubation						
Cricothyroidotomy						
Assess ventilation						
Assess acute inhalation injury						
Mouth ventilation						
Bag ventilation						
Seal open chest wound						
Needle decompression thoracentesis						
Recognize pulmonary blast injury						
Differentiate shock etiologies						
Determine class of hemorrhagic shock						
Establish peripheral IV						
Perform fluid resuscitation						
Administer blood transfusions						
Use of Level I Infusor						
<i>Use pneumatic antishock garment</i>						
Use tourniquet						
Chest tube thoracostomy						

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____ Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>						
Supporting Soldier Tasks	P	Time	A	Time	O	Time
Pericardiocentesis						
Nasogastric intubation						
Placement urinary catheter						
Diagnostic peritoneal lavage						
Assess neurologic status (Glasgow coma scale)						
Recognize signs of epidural/subdural hematoma						
Conduct ATLS secondary survey						
Immobilize long bone fractures						
Immobilize unstable pelvic fracture						
Identify suspected major vascular injuries						
Identify suspected compartment syndromes						
<i>Saline dress white phosphorus wounds</i>						
Assess acute inhalation injury						
Establish degree and percent body burns						
Dress burn wounds						
Treat cold injuries						
Treat hypothermia						
Identify and dress ocular injuries						
Assess and treat pain						
Assess and treat psychosocial needs						
<b>Surgical Services</b>						
PONC=Perioperative Nursing Care						
<b>All aspects</b>						
Coordinate care with surgeon						
Coordinate care with nurse anesthetist						
Manage surgical setup, scrub and circulate						
<b>Skin &amp; soft tissue</b>						
PONC wound debridement						
PONC burn wound treatment and escharotomy						
White phosphorus wound care						
<b>Head &amp; Neck</b>						
PONC repair scalp laceration						
PONC nasal packing						
PONC tracheostomy						
PONC neck exploration						

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
PONC carotid repair							
PONC esophageal repair							
PONC drain epi/subdural hematoma							
<b>Abdominal</b>							
PONC diaphragm repair							
PONC gastric repair							
PONC duodenal repair							
PONC small bowel repair							
PONC colon/rectal repair							
PONC splenectomy/splenorrhaphy							
PONC repair and drain hepatic laceration							
PONC damage control laparotomy							
PONC pancreatic repair/resection							
PONC nephrectomy/nephrorraphy							
PONC ureteral repair							
PONC bladder repair							
PONC repair abdominal aorta/vena cava							
<b>Thoracic</b>							
PONC pericardial window							
PONC repair cardiac injury							
PONC thoracotomy--chest wall repair							
PONC thoracotomy--esophageal repair							
PONC thoracotomy--tracheobronchal repair							
PONC thoracotomy--lung resection							
<b>Extremity</b>							
PONC vascular repair/shunt							
PONC fasciotomies upper & lower extremity							
PONC amputation upper & lower extremity							
PONC open fracture management							
PONC external fixation							
PONC identify and stabilize nerve and tendon injuries							
PONC open joint management							
Application casts and splints							

## APPENDIX E

### TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

[illegible]

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Pre-op Services</b>							
<b>(Triage)</b>							
Assume command & control of triage							
Coordinate care with nursing OIC							
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>							
Establish triage categories							
Establish triage categories (per tactical situation)							
Prioritize resuscitation							
Prioritize surgery							
Prioritize resources (blood)							
<i>Prioritize evacuation</i>							
<b>(Resuscitation)</b>							
Lead resuscitation team							
Conduct ATLS primary survey							
Immobilize suspected spine injuries							
Assess airway							
Clear airway							
OP/NP airway							
OT/NT Intubation							
Cricothyroidotomy							
Assess ventilation							
Assess acute inhalation injury							
Mouth ventilation							
Mouth ventilation							
Bag ventilation							
Seal open chest wound							
Identification of pneumo/hemo thorax							
Needle decompression thoracocentesis							
Chest tube thoracostomy							
Pericardiocentesis							
Manage chest tube drainage system							
Recognize pulmonary blast injury							
Differentiate shock etiologies							
Determine class of hemorrhagic shock							
Start large bore IV							
Use of Level I Infusor							
Perform fluid resuscitation							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Monitor blood transfusions							
Use tourniquet							
Assess neurologic status (Glasgow coma scale)							
Recognize signs of epidural/subdural hematoma							
Conduct ATLS secondary survey							
Immobilize long bone fractures							
Immobilize unstable pelvic fracture							
Identify suspected major vascular injuries							
Identify suspected compartment syndromes							
<i>Saline dress white phosphorus wounds</i>							
Establish degree and percent body burns							
Dress burn wounds							
<i>Treat cold injuries</i>							
<i>Treat hypothermia</i>							
Identify and dress ocular injuries							
Acute pain control							
Assess and treat pain							
Assess and treat psychosocial needs							
<b>a</b> Perform a patient care handwash							
<b>a</b> Measure and record patients respiration's							
<b>a</b> Measure and record patients pulse							
<b>a</b> Measure and record patients blood pressure							
<b>a</b> Measure and record patients temperature							
<b>a</b> Establish and maintain a sterile field							
<b>a</b> Change a sterile dressing							
<b>a</b> Perform wound irrigation							
<b>a</b> Insert an oral pharyngeal airway							
<b>a</b> Ventilate patient with a bag-valve-mask device							
<b>a</b> Set up an oxygen tank							
administer oxygen therapy using a face mask or nasal							
<b>a</b> prongs							
<b>a</b> Perform oral and nasotracheal suctioning of a patient							
<b>a</b> Obtain a blood specimen using a vacutainer							
<b>a</b> Initiate an intravenous infusion							
<b>a</b> Manage a patient with an intravenous infusion							
<b>a</b> Initiate treatment for hypovolemic shock							
<b>a</b> Irrigate an obstructed ear							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks		P	Time	A	Time	O	Time
a	Apply restraining devices to patients						
a	Assemble needle and syringe and draw medications						
a	Administer an injection (IM, sub-q and ID)						
a	Administer blood						
a	Administer oral medications						
a	Administer medications by IV piggyback						
a	Obtain an electrocardiogram						
a	Maintain an indwelling urinary catheter						
a	Provide nursing care for a patient in a cast						
a	Insert a urinary catheter						
a	Provide special skin care						
a	Administer topical medication						
a	Administer rectal or vaginal medications						
a	Administer medicated eye drops or ointments						
a	Perform tracheotomy suctioning						
a	Perform tracheotomy care						
	<b>Surgical Services</b>						
	<b>Post-op Services</b>						
	Coordinate care with team						
	Provide nursing postoperative care						
	Nursing care of postoperative ventilation						
	Nursing care of spine injuries						
	Nursing care of closed head injury						
	Nursing care of cardiac contusion						
	Nursing care of pulmonary contusion/flail chest						
	Nursing care of inhalation injury						
	Nursing care of severe burn injury						
	Nursing care of primary blast injury						
	Nursing care of closed pelvic/femur fracture						
	<i>Nursing care of profound hypothermia</i>						
	Manage central IV lines						
	Acute pain control in the ICU patient						
	<b>General</b>						
	Document assessment and care						
	Document emotional support to trauma patients						





APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Pre-op Services</b>							
<b>(Triage)</b>							
Coordinate care with team							
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>							
Identify life & limb threatening injuries							
Establish triage categories							
Prioritize resuscitation							
Prioritize surgery							
Prioritize evacuation							
Prioritize resources (blood)							
<b>(Resuscitation)</b>							
Start peripheral IV							
Lead resuscitation team							
Conduct ATLS primary survey							
Immobilize suspected spine injuries							
Assess airway							
Clear airway							
OP/NP airway							
OT/NT intubation							
Cricothyrotomy							
Assess ventilation							
Assess acute inhalation injury							
Mouth ventilation							
Bag ventilation							
Seal open chest wound							
Needle decompression thoracentesis							
Recognize pulmonary blast injury							
Differentiate shock etiologies							
Determine class of hemorrhagic shock							
Perform fluid resuscitation							
Administer blood transfusions							
Use pneumatic antishock garment							
Use tourniquet							
Chest tube thoracostomy							
Pericardiocentesis							
Nasogastric intubation							
Place urinary catheter							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Diagnostic peritoneal lavage							
Assess neurologic status (Glasgow coma scale)							
Recognize signs of epidural/subdural hematoma							
Conduct ATLS secondary survey							
Immobilize long bone fractures							
Immobilize unstable pelvic fracture							
Identify suspected major vascular injuries							
Identify suspected compartment syndromes							
<i>Saline dress white phosphorus wounds</i>							
Establish degree and percent body burns							
Dress burn wounds							
Treat cold injuries							
Treat hypothermia							
Identify and dress ocular injuries							
Assess and treat pain							
Assess and treat psychosocial needs							
<b>Surgical Services</b>							
PONC=Perioperative Nursing Care							
<b>All aspects</b>							
a Process items for sterilization							
a Prepare instrument sets							
a Perform chemical disinfection or sterilization							
a Perform the surgical hand and arm scrub							
a Put on sterile gown and gloves							
a Gown and glove surgical team members							
a Assist surgical team members in the gown and glove procedure							
a Select sterile supplies for a surgical procedure							
a Arrange instruments and supplies on a sterile field							
a Drape mayo stand and tray							
a Arrange prep, linens and basin sets, gowns and gloves							
a Position equipment draped with sterile linen							
a Prepare the electrosurgical unit for a surgical procedure							
a Remove soiled items from the OR following a surgical procedure							
a Dispose of contaminated liquids and solids							
a Clean the OR							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
a Prepare the patient for movement to the OR							
a Perform the surgical shave prep							
a Assist in placing a patient in/out of the lithotomy position							
a Assist in placing a patient in the Kraske (jackknife) position							
a Assist in draping the patient for a surgical procedure							
a Apply/remove a pneumatic tourniquet on a patient							
a Weigh sponges and calculate blood loss							
a Pass suture materials							
a Process specimens and cultures							
a Pass instruments and supplies during a surgical procedure							
a Perform sponge, instrument, sharps and needle counts							
Coordinate care with surgeon							
Coordinate care with nurse anesthetist							
Manage surgical setup, scrub and circulate							
<b>Skin &amp; soft tissue</b>							
PONC wound debridement							
PONC burn wound treatment and escharotomy							
White phosphorus wound care							
<b>Head &amp; Neck</b>							
PONC repair scalp laceration							
PONC nasal packing							
PONC tracheostomy							
PONC neck exploration							
PONC carotid repair							
PONC esophageal repair							
PONC drain epi/subdural hematoma							
<b>Abdominal</b>							
PONC diaphragm repair							
PONC gastric repair							
PONC duodenal repair							
PONC small bowel repair							
PONC colon/rectal repair							
PONC splenectomy/splenorrhaphy							
PONC repair and drain hepatic laceration							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
PONC damage control laparotomy							
PONC pancreatic repair/resection							
PONC nephrectomy/nephrorraphy							
PONC ureteral repair							
PONC bladder repair							
PONC repair abdominal aorta/vena cava							
<b>Thoracic</b>							
PONC pericardial window							
PONC repair cardiac injury							
PONC thoracotomy--chest wall repair							
PONC thoracotomy--esophageal repair							
PONC thoracotomy--tracheobronchial repair							
PONC thoracotomy--lung resection							
<b>Extremity</b>							
PONC vascular repair/shunt							
PONC fasciotomies upper & lower extremity							
PONC amputation upper & lower extremity							
PONC open fracture management							
PONC external fixation							
PONC identify and stabilize nerve and tendon injuries							
PONC open joint management							
Application casts and splints							
<b>Post-op Services</b>							
Coordinate care with team							
Provide nursing postoperative care							
Nursing care of spine injuries							
Nursing care of closed head injury							
Nursing care of cardiac contusion							
Nursing care of pulmonary contusion/flail chest							
Nursing care of inhalation injury							
Nursing care of severe burn injury							
Nursing care of primary blast injury							
Nursing care of closed pelvic/femur fracture							
Nursing care of profound hypothermia							
<b>General</b>							
Document assessment and care							
Document emotional support to trauma patients							

## TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

## Time

3. Identify any difficulties or problems you experienced today that the CDR / XO / Nursing OIC can correct.

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
<b>Treat Unit Casualties</b>							
a Prepare intubation equipment							
a Intubate a patient							
a Put on sterile gloves							
a Measure a patients respiration's							
a Measure a patients pulse							
a Measure a patients blood pressure							
a Measure a patients temperature							
a Open the airway							
a Clear an upper airway obstruction							
a Manage a convulsive and/or seizing patient							
a Treat a casualty for a heat injury							
a Treat a casualty for a cold injury							
a Immobilize a suspected dislocated and/or fractured ankle using a splint							
a Apply pneumatic splint to a casualty with suspected fracture of an extremity							
a Administer external cardiac compressions							
a Perform rescue breathing							
a Survey a casualty							
a Insert an oropharyngeal airway							
a Ventilate a patient with a bag-valve-mask system							
a Administer oxygen therapy using a face mask or nasal prongs							
a Perform oral and nasotracheal suctioning of a patient							
a Initiate treatment for anaphylactic shock							
a Initiate an intravenous infusion							
a Manage a patient with an intravenous infusion							
a Manage a patient with an open abdominal wound							
a Apply a dressing to an impalement injury							
a Initiate treatment for hypovolemic shock							
a Manage an unconscious casualty							
a Treat a casualty with a closed chest wound							
a Treat a casualty with an open or closed head injury							
a Irrigate eyes							
a Treat lacerations, contusions, and extrusions of the eye							
a Treat burns of the eye							

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
a Apply a roller bandage							
a Apply arm slings							
a Immobilize a suspected fracture of the arm or dislocated shoulder							
a Immobilize a suspected dislocated or fractured hip							
a Administer initial treatment for burns							
a Treat a casualty for insect bites or stings							
a Treat a casualty for snakebite							
a Immobilize a fractured femur using Hare traction splint							
a Transport a casualty with a suspected spinal injury							
a Perform a surgical cricothyrotomy							
a Apply pneumatic anti-shock garment							
a Stabilize a casualty with inhalation burns							
<b>Pre-op Services</b>							
<b>(Triage)</b>							
Assume command & control of triage							
Coordinate care with team							
<i>Identify hazardous patients (chem/bio/WP/ordinance)</i>							
Establish triage categories							
Identify life & limb threatening injuries							
Prioritize resuscitation							
Prioritize surgery							
Prioritize resources (blood)							
<i>Prioritize evacuation</i>							
<b>(Resuscitation)</b>							
Lead resuscitation team							
Conduct ATLS primary survey							
Immobilize suspected spine injuries							
Assess airway							
Clear airway							
OP/NP airway							
OT/NT intubation							
Cricothyrotomy							
Assess ventilation							
Access acute inhalation injury							
Mouth ventilation							
Bag ventilation							

*Italics indicates RRC index cases*

APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____	Date _____						
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks	P	Time	A	Time	O	Time	
Seal open chest wound							
Identification of pneumo/hemo thorax							
Needle decompression thoracocentesis							
Chest tube thoracostomy							
Pericardiocentesis							
Manage chest tube drainage system							
Recognize pulmonary blast injury							
Differentiate shock etiologies							
Determine class of hemorrhagic shock							
Start large bore IV							
Use of Level I Infusor							
Perform fluid resuscitation							
Administer blood transfusions							
Use tourniquet							
Diagnostic peritoneal lavage							
Assess neurologic status (Glasgow coma scale)							
Recognize signs of epidural/subdural hematoma							
Conduct ATLS secondary survey							
Immobilize long bone fractures							
Immobilize unstable pelvic fracture							
Identify suspected major vascular injuries							
Identify suspected compartment syndromes							
<i>Saline dress white phosphorus wounds</i>							
Establish degree and percent body burns							
Dress burn wounds							
<i>Treat cold injuries</i>							
<i>Treat hypothermia</i>							
Identify and dress ocular injuries							
Acute pain control							
Assess and treat pain							
Assess and treat psychosocial needs							
<b>a</b> Perform a patient care handwash							
<b>a</b> Establish a sterile field							
<b>a</b> Perform a wound irrigation							
<b>a</b> Prepare an area for operative treatment							
<b>a</b> Obtain a blood specimen using a vacutainer							



APPENDIX E  
TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

Codebook _____ Date _____							
<i>P=performed, A=assisted, O=observed and Time to complete procedure</i>							
Supporting Soldier Tasks		P	Time	A	Time	O	Time
a	Treat foreign bodies of the eye						
a	Irrigate an obstructed ear						
a	Perform a needle cricothyrotomy						
a	<i>Deflate pneumatic anti-shock garment</i>						
a	<i>Maintain pneumatic anti-shock garment</i>						
a	Insert urinary catheter						
a	Insert a nasogastric tube						
a	Prepare for nasogastric intubation						
a	Prepare for urinary catheterization						
<b>Surgical Services</b>							
<b>Post-op Services</b>							
a	Extubate a patient						
a	Measure a patients intake and output						
a	Change a sterile dressing						
	Coordinate care with team						
	Provide nursing postoperative care						
	Manage postoperative ventilation						
	Nursing care of spine injuries						
	Nursing care of closed head injury						
	Nursing care of cardiac contusion						
	Nursing care of pulmonary contusion/flail chest						
	Nursing care of inhalation injury						
	Nursing care of severe burn injury						
	<i>Nursing care of primary blast injury</i>						
	Nursing care of closed pelvic/femur fracture						
	Nursing care of profound hypothermia						
	Manage central IV lines						
	Monitor large volume blood infusions						
	Acute pain control in the ICU patient						
<b>General</b>							
	Document assessment and care						
	Document emotional support to trauma patients						

## APPENDIX E

### TRAUMA CASE LOG AND SUPPORTING SOLDIER TASKS

[illegible]

**APPENDIX F**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

**Final Survey Scenario**

The purpose of CTST is to improve your individual and collective skills in the management of trauma patients. Furthermore, CTST is to improve your approach and confidence in caring for trauma patients. Ultimately, the military value of CTST is for you to be able to provide better care for our combat casualties. Your assessment of the training value provided by CTST is important to define the overall training benefit of the program. This final survey will be used to measure the training benefit of CTST training at Ben Taub General Hospital (BTGH).

Assume you and your team members are fully trained with your FST equipment and have conducted moulage casualty trauma drills at the FST. As an FST trauma team, you have never conducted real world trauma care at your military treatment center or in combat. However, you have just completed one month of CTST at BTGH. Potentially, your FST could be deployed as the only unit with surgical capability at a joint casualty collecting point (containing medical company elements which can provide first aid and ATLS support). Your FST will have surgical support located two hours to the rear. Your joint casualty collecting point will have a high probability of seeing up to 100 casualties in 24 hours with 10 to 15 of these casualties having life or limb threatening conditions.

You have been provided with sections of the Army manual, Employment of Forward Surgical Teams (FST). Review the manual so you will understand the environment, limitations, and responsibilities of providing trauma care to our combat casualties at the level of the FST. After reading the manual, answer the survey from the perspective of a military health care provider assessing their ability to provide "optimal" trauma patient care. For the purposes of this survey, "optimal" care is defined as the highest standard of quality patient care possible under the tactical, environmental, equipment, and support limitations you are functioning in. It is understood that care at the level of the FST will not necessarily allow for trauma outcomes that are comparable to the best results at Level I trauma centers. However, with your current level of individual and team trauma skills, will you be able to obtain the best achievable outcomes ("optimal") for your patients whether you are at a Level 1 trauma center or an FST?

NOTE: For the survey, you are not assessing the adequacy of the FST equipment. You are assessing your ability to function as a trauma care giver.

The survey questions will ask you to circle the response that best describes your degree of agreement with the statement. You will be able to choose a degree of agreement ranging from strongly disagree to strongly agree. Additionally, please complete the After Action Comments section so that we may take steps to improve the training in the future. Please take the time to read each question carefully before responding.

**APPENDIX G**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

**After Action Comments**

Please complete all questions based on your specific MOS / AOC and your task list. Further assume that you and your team members were previously assigned to a FST at BAMC. For each question circle the appropriate answer and please provide additional information to explain your answer.

1. What were your personal goals for the CTST program? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Did the CTST meet your personal goals?      **YES**      **NO**  
Please explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Did the CTST improve your ability to provide trauma care at a Level 1 Trauma Center?  
Please explain:      **YES**      **NO**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Did the CTST improve your ability to provide trauma care at the level of the FST?  
Please explain:      **YES**      **NO**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Did the CTST improve your ability to provide your military peacetime patient care duties?  
Please explain:      **YES**      **NO**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**APPENDIX G**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

6. Did the CTST improve the FST's ability to provide trauma care at a Level 1 Trauma Center?

Please explain:

**YES    NO**

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7. Did the CTST improve the FST's ability to provide trauma care at the Level of the FST?

Please explain:

**YES    NO**

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8. Did the experience with BTGH low fluid volume trauma resuscitation protocols improve your ability to care for combat casualties at the level of the FST?

Please explain:

**YES    NO**

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9. Did the BTGH trauma patients you cared for have injuries you felt were comparable to injuries you will see at the level of the FST?

Please explain:

**YES    NO**

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10. Was the volume of BTGH trauma patients you cared for adequate for CTST?

Please explain:

**YES    NO**

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**APPENDIX G**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

11. Were you given adequate trauma cross-training at BTGH to feel comfortable working in different areas (i.e. OR, ER, ICU) at the level of the FST?

Please explain:

**YES    NO**

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12. Was one month of CTST too long, too short or adequate to prepare you to function in a deployed FST?

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How long a time period would you recommend and why?

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13. What was the most beneficial aspect of the CTST at Ben Taub for you clinically and why?

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14. What was the least beneficial aspect of the CTST at Ben Taub for you clinically and why?

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15. Would you recommend individual CTST for every soldier in your specialty?

**YES    NO**

Why? 

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**APPENDIX G**  
**COMBAT TRAUMA SURGICAL TRAINING (CTST)**  
**BEN TAUB PILOT STUDY (SEPTEMBER 1998)**

16. Would you recommend team CTST for every FST?

**YES      NO**

Why? \_\_\_\_\_

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17. What would you do to improve the CTST program?

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## Oneway

### Warnings

There are fewer than two groups for dependent variable yrs since MOS tng. No statistics are computed.

There are fewer than two groups for dependent variable yrs in level 1 ctr. No statistics are computed.

There are fewer than two groups for dependent variable work trauma now. No statistics are computed.

There are fewer than two groups for dependent variable real mascsl. No statistics are computed.

There are fewer than two groups for dependent variable deploy cbt mascsl. No statistics are computed.



APPENDIX H  
Statistical Printout From SPSS

Descriptives

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
							Lower Bound	Upper Bound
gender	pre or post survey	pre	19	.79	.42	9.61E-02	.59	.99
		post	19	.79	.42	9.61E-02	.59	.99
		Total	38	.79	.41	6.70E-02	.65	.93
MOS	pre or post survey	pre	19	5.00	2.56	.59	3.77	6.23
		post	19	5.00	2.56	.59	3.77	6.23
		Total	38	5.00	2.53	.41	4.17	5.83
ARANK	pre or post survey	pre	19	9.32	4.85	1.11	6.98	11.66
		post	19	9.32	4.85	1.11	6.98	11.66
		Total	38	9.32	4.79	.78	7.74	10.89
1-peacetime prep trauma BTGH	pre or post survey	pre	19	3.63	1.46	.34	2.93	4.34
		post	19	4.26	1.10	.25	3.73	4.79
		Total	38	3.95	1.31	.21	3.52	4.38
2-peacetime prep trauma FST	pre or post survey	pre	19	3.42	1.39	.32	2.75	4.09
		post	19	3.95	1.22	.28	3.36	4.54
		Total	38	3.68	1.32	.21	3.25	4.12
3-do trauma at BAMC	pre or post survey	pre	19	4.26	1.24	.28	3.67	4.86
		post	19	4.79	.42	9.61E-02	4.59	4.99
		Total	38	4.53	.95	.15	4.21	4.84
4-do trauma at BTGH	pre or post survey	pre	19	3.84	1.12	.26	3.30	4.38
		post	19	4.68	.48	.11	4.45	4.91
		Total	38	4.26	.95	.15	3.95	4.58
5-do casualties at FST	pre or post survey	pre	19	3.42	1.30	.30	2.79	4.05
		post	19	4.58	.51	.12	4.33	4.82
		Total	38	4.00	1.14	.18	3.63	4.37
6-resuscitate at BAMC	pre or post survey	pre	19	4.00	1.25	.29	3.40	4.60
		post	19	4.68	.48	.11	4.45	4.91
		Total	38	4.34	.99	.16	4.02	4.67
7-resuscitate at BTGH	pre or post survey	pre	19	3.58	1.30	.30	2.95	4.21
		post	19	4.63	.50	.11	4.39	4.87
		Total	38	4.11	1.11	.18	3.74	4.47
8-resuscitate at FST	pre or post survey	pre	19	3.47	1.35	.31	2.82	4.12
		post	19	4.58	.51	.12	4.33	4.82
		Total	38	4.03	1.15	.19	3.65	4.40
10-prep tm BTGH	pre or post survey	pre	19	3.21	1.13	.26	2.66	3.76
		post	19	3.89	1.24	.29	3.30	4.49
		Total	38	3.55	1.22	.20	3.15	3.95
11-prep tm FST	pre or post survey	pre	19	3.16	.96	.22	2.70	3.62
		post	19	3.84	1.17	.27	3.28	4.40
		Total	38	3.50	1.11	.18	3.14	3.86
12-do trauma BAMC	pre or post survey	pre	19	3.74	.99	.23	3.26	4.21
		post	19	4.68	.58	.13	4.40	4.96
		Total	38	4.21	.93	.15	3.90	4.52
13-do trauma BTGH	pre or post survey	pre	19	3.47	1.12	.26	2.93	4.02
		post	19	4.53	.61	.14	4.23	4.82
		Total	38	4.00	1.04	.17	3.66	4.34
14-do trauma FST	pre or post survey	pre	19	3.32	1.06	.24	2.81	3.83
		post	19	4.47	.84	.19	4.07	4.88
		Total	38	3.89	1.11	.18	3.53	4.26

APPENDIX H  
Statistical Printout From SPSS

Descriptives

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
							Lower Bound	Upper Bound
15-triage at BAMC	pre or post survey	pre post	19	4.11	.81	.19	3.72	4.50
			19	4.47	.61	.14	4.18	4.77
		Total	38	4.29	.73	.12	4.05	4.53
16-triage at BTGH	pre or post survey	pre post	19	3.63	1.07	.24	3.12	4.14
			19	4.37	.68	.16	4.04	4.70
		Total	38	4.00	.96	.16	3.68	4.32
17-triage at FST	pre or post survey	pre post	19	3.79	.98	.22	3.32	4.26
			19	4.42	.51	.12	4.18	4.67
		Total	38	4.11	.83	.13	3.83	4.38
18-resuscitation at BAMC	pre or post survey	pre post	19	4.16	.69	.16	3.83	4.49
			19	4.68	.58	.13	4.40	4.96
		Total	38	4.42	.68	.11	4.20	4.65
19-resuscitation at BTGH	pre or post survey	pre post	19	3.89	.88	.20	3.47	4.32
			19	4.63	.50	.11	4.39	4.87
		Total	38	4.26	.79	.13	4.00	4.52
20-resuscitation at FST	pre or post survey	pre post	19	3.68	.89	.20	3.26	4.11
			19	4.53	.61	.14	4.23	4.82
		Total	38	4.11	.86	.14	3.82	4.39
21-surgery at BAMC	pre or post survey	pre post	19	4.11	.99	.23	3.63	4.58
			19	4.74	.45	.10	4.52	4.95
		Total	38	4.42	.83	.13	4.15	4.69
22-surgery at BTGH	pre or post survey	pre post	19	3.89	1.05	.24	3.39	4.40
			19	4.68	.48	.11	4.45	4.91
		Total	38	4.29	.90	.15	3.99	4.58
23-surgery at FST	pre or post survey	pre post	19	3.74	1.15	.26	3.18	4.29
			19	4.58	.61	.14	4.29	4.87
		Total	38	4.16	1.00	.16	3.83	4.49
24-post-op/ICU at BAMC	pre or post survey	pre post	19	4.21	.79	.18	3.83	4.59
			19	4.63	.60	.14	4.34	4.92
		Total	38	4.42	.72	.12	4.18	4.66
25-post-op/ICU at BTGH	pre or post survey	pre post	19	3.95	.85	.19	3.54	4.36
			19	4.53	.70	.16	4.19	4.86
		Total	38	4.24	.82	.13	3.97	4.51
26-post-op/ICU at FST	pre or post survey	pre post	19	3.95	.85	.19	3.54	4.36
			19	4.53	.70	.16	4.19	4.86
		Total	38	4.24	.82	.13	3.97	4.51
9-prep tm BAMC	pre or post survey	pre post	19	3.53	1.17	.27	2.96	4.09
			19	4.11	1.20	.27	3.53	4.68
		Total	38	3.82	1.20	.20	3.42	4.21

**APPENDIX H**  
Statistical Printout From SPSS

**Descriptives**

			Minimum	Maximum
gender	pre or	pre	0	1
	post	post	0	1
	survey	Total	0	1
MOS	pre or	pre	1	8
	post	post	1	8
	survey	Total	1	8
ARANK	pre or	pre	4	16
	post	post	4	16
	survey	Total	4	16
1-peacetime prep trauma BTGH	pre or	pre	1	5
	post	post	1	5
	survey	Total	1	5
2-peacetime prep trauma FST	pre or	pre	1	5
	post	post	1	5
	survey	Total	1	5
3-do trauma at BAMC	pre or	pre	2	5
	post	post	4	5
	survey	Total	2	5
4-do trauma at BTGH	pre or	pre	2	5
	post	post	4	5
	survey	Total	2	5
5-do casualties at FST	pre or	pre	1	5
	post	post	4	5
	survey	Total	1	5
6-resuscitate at BAMC	pre or	pre	1	5
	post	post	4	5
	survey	Total	1	5
7-resuscitate at BTGH	pre or	pre	1	5
	post	post	4	5
	survey	Total	1	5
8-resuscitate at FST	pre or	pre	1	5
	post	post	4	5
	survey	Total	1	5
10-prep tm BTGH	pre or	pre	1	5
	post	post	1	5
	survey	Total	1	5
11-prep tm FST	pre or	pre	2	5
	post	post	1	5
	survey	Total	1	5
12-do trauma BAMC	pre or	pre	2	5
	post	post	3	5
	survey	Total	2	5
13-do trauma BTGH	pre or	pre	1	5
	post	post	3	5
	survey	Total	1	5
14-do trauma FST	pre or	pre	1	5
	post	post	2	5
	survey	Total	1	5

**APPENDIX H**  
Statistical Printout From SPSS

**Descriptives**

			Minimum	Maximum
15-triage at BAMC	pre or post survey	pre post Total	2 3 2	5 5 5
16-triage at BTGH	pre or post survey	pre post Total	1 3 1	5 5 5
17-triage at FST	pre or post survey	pre post Total	2 4 2	5 5 5
18-resuscitation at BAMC	pre or post survey	pre post Total	2 3 2	5 5 5
19-resuscitation at BTGH	pre or post survey	pre post Total	2 4 2	5 5 5
20-resuscitation at FST	pre or post survey	pre post Total	2 3 2	5 5 5
21-surgery at BAMC	pre or post survey	pre post Total	1 4 1	5 5 5
22-surgery at BTGH	pre or post survey	pre post Total	1 4 1	5 5 5
23-surgery at FST	pre or post survey	pre post Total	1 3 1	5 5 5
24-post-op/ICU at BAMC	pre or post survey	pre post Total	2 3 2	5 5 5
25-post-op/ICU at BTGH	pre or post survey	pre post Total	2 3 2	5 5 5
26-post-op/ICU at FST	pre or post survey	pre post Total	2 3 2	5 5 5
9-prep tm BAMC	pre or post survey	pre post Total	2 1 1	5 5 5

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
gender	Between Groups	.000	1	.000	.000	1.000
	Within Groups	6.316	36	.175		
	Total	6.316	37			

APPENDIX H  
Statistical Printout From SPSS

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
MOS	Between Groups	.000	1	.000	.000	1.000
	Within Groups	236.000	36	6.556		
	Total	236.000	37			
ARANK	Between Groups	.000	1	.000	.000	1.000
	Within Groups	848.211	36	23.561		
	Total	848.211	37			
1-peacetime prep trauma BTGH	Between Groups	3.789	1	3.789	2.270	.141
	Within Groups	60.105	36	1.670		
	Total	63.895	37			
2-peacetime prep trauma FST	Between Groups	2.632	1	2.632	1.538	.223
	Within Groups	61.579	36	1.711		
	Total	64.211	37			
3-do trauma at BAMC	Between Groups	2.632	1	2.632	3.072	.088
	Within Groups	30.842	36	.857		
	Total	33.474	37			
4-do trauma at BTGH	Between Groups	6.737	1	6.737	9.107	.005
	Within Groups	26.632	36	.740		
	Total	33.368	37			
5-do casualties at FST	Between Groups	12.737	1	12.737	13.003	.001
	Within Groups	35.263	36	.980		
	Total	48.000	37			
6-resuscitate at BAMC	Between Groups	4.447	1	4.447	4.987	.032
	Within Groups	32.105	36	.892		
	Total	36.553	37			
7-resuscitate at BTGH	Between Groups	10.526	1	10.526	10.811	.002
	Within Groups	35.053	36	.974		
	Total	45.579	37			
8-resuscitate at FST	Between Groups	11.605	1	11.605	11.180	.002
	Within Groups	37.368	36	1.038		
	Total	48.974	37			
10-prep tm BTGH	Between Groups	4.447	1	4.447	3.143	.085
	Within Groups	50.947	36	1.415		
	Total	55.395	37			
11-prep tm FST	Between Groups	4.447	1	4.447	3.900	.056
	Within Groups	41.053	36	1.140		
	Total	45.500	37			
12-do trauma BAMC	Between Groups	8.526	1	8.526	12.903	.001
	Within Groups	23.789	36	.661		
	Total	32.316	37			
13-do trauma BTGH	Between Groups	10.526	1	10.526	12.857	.001
	Within Groups	29.474	36	.819		
	Total	40.000	37			
14-do trauma FST	Between Groups	12.737	1	12.737	13.962	.001
	Within Groups	32.842	36	.912		
	Total	45.579	37			
15-triage at BAMC	Between Groups	1.289	1	1.289	2.506	.122
	Within Groups	18.526	36	.515		
	Total	19.816	37			
16-triage at BTGH	Between Groups	5.158	1	5.158	6.438	.016
	Within Groups	28.842	36	.801		
	Total	34.000	37			

APPENDIX H  
Statistical Printout From SPSS

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
17-triage at FST	Between Groups	3.789	1	3.789	6.261	.017
	Within Groups	21.789	36	.605		
	Total	25.579	37			
18-resuscitation at BAMC	Between Groups	2.632	1	2.632	6.475	.015
	Within Groups	14.632	36	.406		
	Total	17.263	37			
19-resuscitation at BTGH	Between Groups	5.158	1	5.158	10.197	.003
	Within Groups	18.211	36	.506		
	Total	23.368	37			
20-resuscitation at FST	Between Groups	6.737	1	6.737	11.636	.002
	Within Groups	20.842	36	.579		
	Total	27.579	37			
21-surgery at BAMC	Between Groups	3.789	1	3.789	6.353	.016
	Within Groups	21.474	36	.596		
	Total	25.263	37			
22-surgery at BTGH	Between Groups	5.921	1	5.921	8.921	.005
	Within Groups	23.895	36	.664		
	Total	29.816	37			
23-surgery at FST	Between Groups	6.737	1	6.737	8.000	.008
	Within Groups	30.316	36	.842		
	Total	37.053	37			
24-post-op/ICU at BAMC	Between Groups	1.684	1	1.684	3.449	.071
	Within Groups	17.579	36	.488		
	Total	19.263	37			
25-post-op/ICU at BTGH	Between Groups	3.184	1	3.184	5.286	.027
	Within Groups	21.684	36	.602		
	Total	24.868	37			
26-post-op/ICU at FST	Between Groups	3.184	1	3.184	5.286	.027
	Within Groups	21.684	36	.602		
	Total	24.868	37			
9-prep tm BAMC	Between Groups	3.184	1	3.184	2.269	.141
	Within Groups	50.526	36	1.404		
	Total	53.711	37			

## COST ANALYSIS

### COMBAT TRAUMA SURGICAL TRAINING (CTST) of a FORWARD SURGICAL TEAM (FST)

#### The Ben Taub Pilot Project (September 1998)

1. Objectives: The Report of Combat Trauma Surgical Training (CTST) At Ben Taub General Hospital (BTGH) stated that one of the primary purposes of the Ben Taub Pilot was to perform a cost analysis of the CTST pilot rotation. Many Brooke Army Medical Center (BAMC) leaders have expressed concern that deploying a full team of nineteen providers would generate significant upfront and opportunity costs. The authors sought to develop a methodology that could be utilized to quantify and measure these costs with objective data. This data would allow senior decision makers to make objective decisions based on a cost benefit analysis. The authors formulated both null and alternate hypotheses. The null hypothesis was that deploying a team to conduct CTST would have no impact on the military treatment facility (MTF) as measured by upfront and opportunity costs. For the purposes of this study upfront costs include travel, licenses, per diem and housing. Opportunity costs include the replacement costs (increased or new contract expenditures to replace deployed providers) and lost productivity (reduced workload in the affected departments). Therefore, the alternate hypothesis was that deploying a team to conduct CTST would have an impact on the military treatment facility (MTF) as measured by upfront and opportunity costs.

2. Upfront costs. The identified and analyzed upfront costs include travel, licenses, per diem, and housing.

a. Travel. Calculation of travel costs was performed using the Joint Travel Regulation for 1998. This was performed with assistance from the budget officer at Brooke Army Medical Center (BAMC). The regulation provides the reimbursement rate for mileage as \$ 0.3175 per mile and lists the mileage from BAMC to Houston, Texas as 406 miles. While two of the physicians came from other sites, the calculations remain the same and vary only in terms of number of travel days and mileage allowed. The calculations yield a total travel cost of \$ 2,041 for the 20 members of the FST. This cost was minimized by authorizing only eleven of the FST members to drive, and obtaining free parking from BTGH. Appendix A, Upfront Costs, includes a sheet titled Rotation Costs (Sep 98) and shows the per diem, travel and license costs per individual. To protect confidentiality the soldiers are listed as numbers one through twenty.

b. Licenses. Calculating the cost of temporary licenses for the team members required several steps. First, the authors determined that standard temporary licensing mechanisms through the Texas state medical and nursing boards were available. These temporary licenses would have cost approximately \$ 50 per physician, \$ 100 per RN and \$ 90 per LVN. Second, the authors determined that only one team member, an RN, required a temporary license for the state of Texas. Those remaining team members whom required licenses to practice already possessed permanent Texas state licenses. Thus the total cost for licenses for the Pilot Project was \$ 100. If all members required Texas licenses the total cost would be \$ 970 as depicted in Table 1 below.

Table 1

Specialty	# per FST	License Cost	Total
Physician	4	\$ 50 (30 day temp)	\$ 200
RN's	5	\$ 100	\$ 500
LVN's	3	\$ 90	\$ 270
			<b>\$ 970 per FST</b>

c. Per Diem. The web site at <http://www.dtic.mil/perdiem/rateinfo.html> and the BAMC budget officer were utilized as resources to calculate per diem costs. The per diem rate for Houston, Texas was \$ 38. This is based on government meals being unavailable. Of note is that while on the first and last day of travel a soldier receives 75% of the destination cities per diem rate. Travel days are the number of days authorized to travel to reach a destination. They are based on the number of miles from point of origin to destination. One travel day is authorized from San Antonio to Houston, Texas. Thus each soldier incurred at least two travel days (round trip), each at 75% of \$ 38. This yields a total of \$ 57. The temporary duty (TDY) per diem rate for the remaining days is only \$ 2 per day (excluding travel days) for incidentals. This is based on the fact that housing and meals were provided at no cost to the soldiers by BTGH during the temporary duty period. Several soldiers incurred a second or third trip back and forth to San Antonio due to various missions. In aggregate this yields a total per diem cost for the FST of \$ 2564.73.

d. Housing. BTGH provided housing for the entire FST for the duration of the pilot project. The FST was housed in the Texas Womens University (TWU) Dormitory located approximately two blocks from BTGH. The FST utilized the entire seventh floor, consisting of twelve double occupancy rooms with bathrooms and a separate community kitchen with stove, oven, microwave and sink. Therefore, the pilot project incurred no housing costs. While BTGH will not provide free housing for future rotations they have assisted the military in obtaining a very reasonable contract with TWU. Currently the TWU will provide the entire seventh floor described above for \$ 5880 per month.

e. Total Cost for CTST conducted in September 1998 was \$ 4706 as listed below in Table 2.

Table 2

Travel	\$ 2,041
MD License	\$ 0
RN License	\$ 100
LVN License	\$ 0
Per Diem	\$ 2,565
Housing	\$ 0
<b>Total Cost</b>	<b>\$ 4,706</b>



f. Full Cost. If the pilot had been conducted as a typical full cost TDY the total cost would have been approximately \$ 72,168. Calculations are shown below in Table 3. This is based on rates discussed above without BTGH providing housing and meals.

Table 3

	Rate	# Days or Miles	# Soldiers	Total
Mileage	\$ 0.3175		20	\$ 2,578.10
MD Temp License	\$ 50.00		4	\$ 200.00
RN License	\$ 100.00		5	\$ 500.00
LVN License	\$ 90.00		3	\$ 270.00
Per Diem (Travel)	\$ 28.50	2 days	20	\$ 1,140.00
Per Diem (On Site)	\$ 38.00	28 days	20	\$ 21,280.00
Housing**	\$ 77.00	30	20	\$ 46,200.00
			<b>Full Cost</b>	<b>\$72,168.10</b>
**rate obtained from <a href="http://www.dtic.mil/perdiem/rateinfo.html">http://www.dtic.mil/perdiem/rateinfo.html</a>				

g. Future Rotations. Predicted costs for future rotations of the 22 corps surgical assets currently in the Army inventory are displayed in Appendix A, Upfront Costs, on a spreadsheet titled Future Rotation Costs. For example, one FST from each of the three Army Corps could be trained for approximately \$ 53,812.00. This is based on upfront costs of \$ 12,232 from Fort Hood, \$ 20,470 from Fort Bragg and \$ 21,110 from Fort Lewis.

3. Opportunity costs. The identified and analyzed opportunity costs include the replacement costs (contract expenditures) and lost productivity. These are costs that may be incurred by the MTF due to providing personnel to conduct CTST at BTGH.

a. Data Sources. The automated data sources used in this cost analysis include: the Medical Expense Performance Reporting System (MEPRS), the Composite Health Care System (CHCS), the Uniform Chart of Accounts for Personnel (UCAPERS) and the Workload Management System for Nursing (WMSN). Additional data was obtained through BAMC's Department of Nursing, Nursing Peri-operative Services, the Department of Health Plans Management and Resource Management Division.

b. Methodology. To calculate replacement costs the authors obtained the data from the sources listed above and entered it into Microsoft Excel 97 spreadsheet program. Trend analysis was then conducted on the periods from October 1997 through August 1998 (fiscal year 98) to formulate a projected value for the September 1998 timeframe. The slope and standard deviation were calculated to assist in the analysis. Concurrently, the actual value for September 1998 was determined and compared to the projected value. The difference in projected versus actual was then compared to the standard deviation. Differences of less than two standard deviations from the mean were judged as not statistically significant.

c. Assumptions. Focusing the cost analysis on BAMC is appropriate as BAMC contributed the greatest number of providers to the CTST. The FST is composed of nineteen providers, sixteen of whom deployed from BAMC. These included the fifteen nursing personnel

and one general surgeon. The remaining FST members include two general surgeons and one orthopedic surgeon. The general surgeons deployed from the Institute of Surgical Research (ISR) and William Beaumont Army Medical Center (WBAMC). The orthopedic surgeon deployed from Reynolds Army Community Hospital (RACH). Interestingly, BAMC provided backfill for one surgeon (orthopedist) at RACH for a period of two weeks. This same individual also remained away from BAMC for the duration of the CTST period on leave and TDY status. Thus, BAMC suffered the loss of one orthopedic surgeon for the duration of the CTST period. The BAMC department of surgery reports that they had five non-resident staff level general surgeons unavailable during the month of September 1998. Although only one of these was deployed for CTST, four others were either on leave or deployed on other missions for the duration of the CTST period. Thus BAMC did in fact suffer the loss of an entire FST, by military occupational specialty (MOS), during the period of CTST. The authors therefore determined that conducting the cost analysis with a focus on BAMC was appropriate.

d. Replacement Costs. The replacement costs were analyzed in a four step process.

(1) First, the UCAPERS work center that each team member deployed from was identified. These work centers are referred to as the affected areas in the remainder of the analysis. The affected areas included the general surgery service, orthopedic surgery service, the nurse anesthesia service, the emergency room (ER), the operating room (OR) the trauma surgical intensive care unit (ICU) and the cardiac thoracic unit (CT).

(2) Second, the authors determined through the Department of Surgery and Department of Nursing if any team members were replaced by redistributing existing staff or supplementing with contract employees. The general and orthopedic surgeons were not replaced or supplemented by contract physicians. The certified registered nurse anesthetists (CRNA's) were not replaced. The nurse anesthesia service used one contract CRNA during September 1998. Further analysis revealed that this individual is on a recurring monthly contract with no variation noted over Fiscal Year (FY) 1998. To validate the anecdotal evidence, the authors analyzed the data in UCAPERS and WMSN to track the utilization of contract personnel. However, due to discrepancies noted in the data the authors utilized the applicable DD 250-1 Materiel Inspection and Receiving Reports which detail the actual contract payments made by each area each month down to the individual level. The remaining affected areas (ER, OR, ICU and CT) showed no evidence of shifting nursing assets from one area to another, although each area did display a change in contract personnel utilization (defined by actual DD 250-1 usage) over the CTST period.

(3) Third, the change in contract personnel utilization was determined by conducting a trend analysis of the DD 250-1 Receiving Reports for FY 98. This data was aggregated and entered into Excel 97. The data was then graphed out and a trend analysis was performed using the statistical tools available in the Excel 97 program. This was used to predict the cumulative change in contract nursing expenditures for the four affected areas. This yielded a predicted value of \$ 61,814 worth of contract expenditures with a slope of positive \$ 736 and a standard deviation of \$ 5,670.15. Then the September DD 250-1 were analyzed and the actual contract expenditures was determined to be \$ 70,974. This represents an increase of \$ 9,159 over the projected value.

(4) Fourth, the change in each individual affected area was assessed to determine if the change was due to soldiers deploying to CTST, other missions, or taking leave. This was calculated by first determining the status of the soldiers on each affected area. The Department of Nursing furnished a report indicating, by area, the individuals deployed to CTST, Bosnia, or on leave. Then the change in contract expenditures was assessed for each area. The authors note that the areas that demonstrated lower contract expenditures than predicted were not used in determining the total increase in contract utilization. The areas with increased actual utilization over predicted were then assessed to determine what maximal portion of the increase was attributable to the CTST deployment. As an example, based on DD 250-1 data the OR had a total increase of \$ 2,302.67 of contract nursing expenditures over predicted. A total of three RN's were deployed during the month of CTST. With one at CTST and the remaining two in Bosnia. Thus, at maximum, the cost of CTST is one third of \$ 2,302.67 or \$ 767.56. This methodology was used in each area and yielded a total maximal impact of the CTST deployment of \$ 7,025 which is less than two standard deviations and thus not statistically significant. The graphs for the cost analysis data are included as Appendix B the Cost Analysis Graphs. Additionally, the data for this portion (sheet labeled Affected Areas Report) and the remaining portions of the cost analysis are included in spreadsheet format at Appendix C the Cost Analysis Spreadsheets. The different sheets are easily identified with the applicable sheet name on the lower right corner.

e. Lost productivity.

(1) Methodology. To determine how much, if any, productivity was lost due to personnel deploying to conduct CTST, the authors identified several applicable productivity metrics. The authors studied total OR cases per available operating day (AOD), OR minutes of service, clinic visits, dispositions, ambulatory patient visits (APV) per AOD, and wait times for clinic visits and APV's. In each case the applicable data was obtained for FY98 and entered into Excel '97 spreadsheets. The authors then conducted trend analysis and determined the standard deviation and slope values for each portion of the data. Then the projected value for September 1998 was compared to the actual value. Next, the difference in these two values was analyzed based on numbers of personnel deployed to CTST versus other missions. It must be noted that these calculated impacts are considered the maximal possible due to a variety of potential confounding factors. The opportunity cost data is further displayed graphically in Appendix B as the Cost Analysis Graphs. Additionally, the data for the lost productivity portion of the cost analysis is included in spreadsheet format at Appendix C the Cost Analysis Spreadsheets.

(2) Operating Room. The total number of operating room cases performed is a function of a myriad of variables. However, this portion of the analysis focuses on the impact that the deployment of certified registered nurse anesthetists (CRNA), OR nurses and OR technicians had on the BAMC OR.

(a) Staffing Analysis. The analysis of staffing levels indicated that two OR nurses and two OR technicians were deployed to Bosnia while one OR nurse and three OR technicians were deployed to CTST. Therefore, fifty percent of the total difference between projected and actual value is the maximum OR contract nursing cost attributable to CTST.

Further analysis of the operating room data coupled with interviews with the Chief, Peri-operative Nursing Service indicated that the OR closed two of eleven regularly scheduled rooms for the duration of September 1998 due to the deployment of eight OR nursing personnel exclusive of the CRNAs. Although three CRNAs were deployed during September 1998, two to CTST and one to Bosnia, the reduction in cases or available operating rooms was felt to be due to a shortage of OR nurses and technicians rather than CRNAs. As discussed previously, the DD 250-1 data supported the anecdotal evidence that the nursing anesthesia service did not purchase additional contract CRNA hours.

(b) Cases. The authors obtained the total number of cases and the total AOD per month for each month of FY 98 from the Department of Peri-operative Nursing Service. Total cases per AOD was calculated followed by a trend analysis with this data yielding a projected value of 30.29 OR cases per AOD with a slope of negative 0.44 and a standard deviation of 1.96. Actual value for September 1998 was 27 OR cases per AOD. This represents 2.96 fewer OR cases per AOD compared to the projected value. Based on the staffing analysis, the maximal reduction in OR cases per AOD attributable to CTST is 1.48. This is less than one standard deviation from the mean. Therefore, the CTST deployment's impact on OR cases per AOD was minimal and not statistically significant. This data is available on the sheet labeled OR Cases Total, in Appendix C.

(c) Minutes of Service. Next the number of minutes of service was obtained from the MEPRS Part I. Trend analysis yielded a projected value for minutes of service of 273,996.91 with a slope of positive 50.09 and a standard deviation of 26,680. The actual value for minutes of service in September 1998 was 251,710. This represents 22,286.91 fewer minutes of service compared to the projected value. Based on the staffing analysis, the maximal reduction in minutes of service attributable to CTST is 11,143.46. This is less than one standard deviation from the mean. Therefore, the CTST deployment's impact on minutes of service was minimal and not statistically significant.

(d) Based on this analysis the CTST deployment's impact on productivity of the OR was minimal and not statistically significant. This data is available on the sheet labeled OR Cases Total in Appendix C.

### (3) General Surgery Service.

(a) Staffing Analysis. Analysis of staffing levels indicated that five staff level general surgeons were deployed or absent for the duration of the CTST period. Of the five deployed surgeons, three were assumed to be deployed to CTST. Therefore, sixty percent of the total difference between projected and actual values is the maximum attributable to CTST.

(b) Clinic Visits. The total number of clinic visits per month for FY 98 was obtained through the CHCS Standard Ambulatory Data Record (SADR) and entered into an Excel 97 spreadsheet. Trend analysis was conducted yielding a projected value for clinic visits of 872.27 with a slope of positive 2.45 and a standard deviation of 88.70. The actual value for September 1998 was 797 clinic visits. This represents 75.3 fewer visits compared to the projected value. Based on the staffing analysis, the maximal reduction in clinic visits attributable

to CTST is 45.18. This is significantly less than one standard deviation from the mean. Therefore, the CTST deployment's impact on general surgery clinic visits was minimal and not statistically significant. The data for clinic visits, dispositions, OR cases per AOD and APV per AOD is available on the sheet labeled Gen Surg Visits and Cases in Appendix C.

(c) Dispositions. The total number of dispositions per month for FY 98 was obtained through CHCS Standard Inpatient Data Record (SIDR) and entered into an Excel 97 spreadsheet. Trend analysis of dispositions yielded a projected value of 108.73 with a slope of negative 1.27 and a standard deviation of 14.41. The actual value for September 1998 was 99 dispositions. This represents 9.7 fewer dispositions compared to the projected value. Based on the staffing analysis this yields a total maximal reduction of 5.82 dispositions. This is significantly less than one standard deviation from the mean. Therefore, the CTST deployment's impact on general surgery dispositions was minimal and not statistically significant.

(d) Cases per AOD. The number of cases performed by the General Surgery Service and the number of AOD was obtained from the Department of Peri-operative Nursing Service. Trend analysis of the cases per AOD yielded a projected value of 5.94 with a slope of negative 0.00 and a standard deviation of 0.60. The actual value for September 1998 was 4.6 cases per AOD. This represents 1.3 fewer cases per AOD compared to the projected value. Based on the staffing analysis this yields a total maximal reduction of .78 cases per AOD. This is less than two standard deviations from the mean. Therefore, the CTST deployment's impact on general surgery cases per AOD was minimal and not statistically significant.

(e) APV per AOD. The number of APV performed by the General Surgery Service was obtained from CHCS SADR. Trend analysis of the APV per AOD yielded a projected value of 4.96 with a slope of positive 0.20 and a standard deviation of 1.05. The actual value for September 1998 was 3.20 APV per AOD. This represents 1.76 fewer APV per AOD compared to the projected value. Based on the staffing analysis this yields a total maximal reduction of 1.02 APV per AOD. This is less than one standard deviation from the mean. Therefore, the CTST deployment's impact on general surgery APV per AOD was minimal and not statistically significant.

(f) Clinic Wait Times. The waiting times for General Surgery Clinic were obtained from CHCS with the support of the Department of Health Plan Management. Waiting times are defined as the amount of time a patient waits from the point at which they schedule the appointment to the day they are actually treated in the Clinic. Trend analysis of the clinic waiting times, measured in days, yielded a projected value of 12.44 with a slope of negative 0.51 and a standard deviation of 1.91. The actual value for September 1998 was a 16 day waiting time for an appointment. This represents an increase of 3.6 days compared to the projected value. Based on the staffing analysis this yields a total maximal increase in waiting time of 2.16 days. This is less than two standard deviations from the mean. Therefore, the CTST deployment's impact on general surgery clinic waiting times was minimal and not statistically significant. The data for general surgery wait times is available on the sheet labeled GS & Ortho Wait Times in Appendix C.

(g) APV Waiting Times. The waiting times for general surgery APV's were obtained from CHCS with the support of the Department of Health Plan Management. Trend analysis of the APV waiting times, measured in days, yielded a projected value of 1.53 with a slope of negative 0.53 and a standard deviation of 2.19. The actual value for September 1998 was a 0.8 day waiting time for an appointment. This represents an decrease of 0.7 days compared to the projected value. Therefore, the CTST deployment had no negative impact on general surgery APV waiting times.

#### (4) Orthopedic Surgery Service.

(a) Staffing Analysis. Analysis of staffing levels indicated that of two staff level orthopedic surgeons were deployed or absent for the duration of the CTST period. Of the two deployed surgeons, one was assumed to be deployed to CTST. Therefore, fifty percent of the total difference between projected and actual values is the maximum attributable to CTST. \_

(b) Clinic Visits. The total number of Orthopedic Clinic visits per month for FY 98 was obtained through the CHCS SADR and entered into an Excel 97 spreadsheet. Trend analysis was conducted yielding a projected value for clinic visits of 893.95 with a slope of negative 55.74 and a standard deviation of 222.09. The actual value for September 1998 was 1300 clinic visits. This represents 406.05 more visits compared to the projected value. Therefore, the CTST deployment had no negative impact on orthopedic surgery clinic visits. The data for clinic visits, dispositions, OR cases per AOD and APV per AOD is available on the sheet labeled Ortho Visits and Cases in Appendix C.

(c) Dispositions. The total number of dispositions per month for FY 98 was obtained through CHCS SIDR and entered into an Excel 97 spreadsheet. Trend analysis of dispositions yielded a projected value of 70.09 with a slope of negative 0.32 and a standard deviation of 8.12. The actual value for September 1998 was 50 dispositions. This represents 20.09 fewer dispositions compared to the projected value. Based on the staffing analysis this yields a total maximal reduction of 10.05 dispositions. This is less than two standard deviations from the mean. Therefore, the CTST deployment's impact on orthopedic surgery dispositions was minimal and not statistically significant.

(d) Cases per AOD. The number of cases performed by the Orthopedic Surgery Service and the number of AOD was obtained from the Department of Peri-operative Nursing Service. Trend analysis of the cases per AOD yielded a projected value of 5.24 with a slope of negative 0.19 and a standard deviation of .92. The actual value for September 1998 was 5.71 cases per AOD. This represents .47 more cases per AOD compared to the projected value. Therefore, the CTST deployment had no negative impact on orthopedic surgery cases per AOD.

(e) APV per AOD. The number of APV performed by the Orthopedic Surgery Service was obtained from CHCS SADR. Trend analysis of the APV per AOD yielded a projected value of 3.35 with a slope of positive 0.14 and a standard deviation of 0.77. The actual value for September 1998 was 2.57 APV per AOD. This represents 0.78 fewer APV per AOD compared to the projected value. Based on the staffing analysis this yields a total maximal reduction of 0.39 APV per AOD. This is less than one standard deviation from the mean.

Therefore, the CTST deployment's impact on general surgery APV per AOD was minimal and not statistically significant.

(f) Clinic Wait Times. The waiting times for the Orthopedic Surgery Clinic were obtained from CHCS. Trend analysis of the clinic waiting times, measured in days, yielded a projected value of 23.50 with a slope of positive 1.18 and a standard deviation of 3.28. The actual value for September 1998 was a 21.3 day waiting time for an appointment. This represents an decrease of 2.2 days compared to the projected value. Therefore, the CTST deployment had no negative impact on orthopedic surgery clinic waiting times. The data for orthopedic surgery wait times is available on the sheet labeled GS & Ortho Wait Times in Appendix C.

(g) APV Waiting Times. The waiting times for Orthopedic Surgery APV's were obtained from CHCS. Trend analysis of the APV waiting times, measured in days, yielded a projected value of 1.13 with a slope of negative 0.34 and a standard deviation of 1.68. The actual value for September 1998 was zero days waiting time for an appointment. This represents a decrease of 1.13 days compared to the projected value. Based on the staffing analysis this yields a total maximal increase in APV waiting time of 0.68 days. This is less than one standard deviation from the mean. Therefore, the CTST deployment's impact on orthopedic surgery APV waiting times was minimal and not statistically significant.

4. Conclusion. This cost analysis indicates that the upfront and opportunity costs incurred by BAMC were minimal and not statistically significant. Based on analysis of the data and results, the authors are unable to reject the null hypothesis. Therefore, the authors conclude that deploying a team to conduct CTST had no impact on BAMC as measured by upfront and opportunity costs. As a major Army medical center, BAMC has a great deal of depth in it's staffing levels and appears able to tolerate the short term loss of the small numbers of providers involved in CTST. Smaller MTF's such as Winn Army Community Hospital at Fort Stewart, Georgia may experience much greater opportunity costs due to the smaller size of the various departments and comparative lack of depth in personnel. This cost analysis methodology may be used to more clearly identify the opportunity costs of future rotations from smaller MTF's. This should allow leaders to more accurately project staffing and productivity issues to continue meeting their healthcare mission while conducting critical training deployments such as CTST.

APPEAL A  
Upfront Costs

Soldier	Per Diem	Travel	License Fee	Total
1	\$297.73	\$386.73		\$684.46
2	\$115.00	\$128.91		\$243.91
3	\$115.00	\$50.00		\$165.00
4	\$115.00	\$128.91		\$243.91
5	\$172.00	\$312.21		\$484.21
6	\$113.00	\$0.00		\$113.00
7	\$113.00	\$0.00		\$113.00
8	\$113.00	\$128.91		\$241.91
9	\$113.00	\$0.00		\$113.00
10	\$113.00	\$128.91	\$100.00	\$341.91
11	\$113.00	\$0.00		\$113.00
12	\$168.00	\$260.87		\$428.87
13	\$113.00	\$128.91		\$241.91
14	\$113.00	\$128.91		\$241.91
15	\$113.00	\$0.00		\$113.00
16	\$113.00	\$128.91		\$241.91
17	\$113.00	\$0.00		\$113.00
18	\$113.00	\$0.00		\$113.00
19	\$113.00	\$0.00		\$113.00
20	\$113.00	\$128.91		\$241.91
	\$2,564.73	\$2,041.09	\$100.00	\$4,705.82
			<b>Total Cost</b>	<b>\$4,706</b>



APPEAL A  
Upfront Costs

Post / Country	Lewis	Bragg	Hood	Hawaii	Korea	Campbell	Vincenza	Stewart
Unit	250 FST-ABN	274 FST-ABN	126 FST	8 FST	127 FST	86 CSH	67 FST	240 FST
	47 CSH	28 CSH	555 FST		135 FST			
			21 CSH		121 GEN			
Travel per soldier	\$596.00	\$564.00	\$152.10	\$796.00	\$1,020.00	\$236.00	\$1,298.00	\$470.00
Total FST Travel	\$11,920.00	\$11,280.00	\$3,042.00	\$15,920.00	\$20,400.00	\$4,720.00	\$25,960.00	\$9,400.00
Travel Per Diem	\$57.00	\$57.00	\$57.00	\$57.00	\$57.00	\$57.00	\$57.00	\$57.00
Jet lag Per Diem				\$38.00	\$38.00		\$38.00	
On Site Per Diem	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00
Total Per Diem each	\$117.00	\$117.00	\$117.00	\$155.00	\$155.00	\$117.00	\$155.00	\$117.00
Total Per Diem	\$2,340.00	\$2,340.00	\$2,340.00	\$3,100.00	\$3,100.00	\$2,340.00	\$3,100.00	\$2,340.00
Per Soldier Total	\$713.00	\$681.00	\$269.10	\$951.00	\$1,175.00	\$353.00	\$1,453.00	\$587.00
Travel / PD Total	\$14,260.00	\$13,620.00	\$5,382.00	\$19,020.00	\$23,500.00	\$7,060.00	\$29,060.00	\$11,740.00
Housing Contract	\$5,880.00	\$5,880.00	\$5,880.00	\$5,880.00	\$5,880.00	\$5,880.00	\$5,880.00	\$5,880.00
MD License x 4	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
RN License x 5	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
LVN License x 3	\$270.00	\$270.00	\$270.00	\$270.00	\$270.00	\$270.00	\$270.00	\$270.00
	=	=	=	=	=	=	=	=
20 Soldier Grand Total	\$21,110.00	\$20,470.00	\$12,232.00	\$25,870.00	\$30,350.00	\$13,910.00	\$35,910.00	\$18,590.00
<p>1. Calculations do NOT include cost from home station to departure airport or from arrival airport to destination.</p> <p>2. Travel per diem is calculated based on Houston meal rate of \$ 38. The travel per diem for first and last day of travel is 75% of \$ 38 = \$ 28.50 per day of travel. Thus \$ 28.50 x 2 = \$ 57. FST total is 20 x \$ 57 = \$ 1140.</p> <p>3. Soldiers from Korea, Germany and Hawaii will incur a second day of full Houston meal rate due to overcoming jet lag. \$ 38 x 20 = \$ 760</p> <p>4. Daily per diem is \$ 2 based on meals being provided by Ben Taub and lodging provided by BTGH / Govt contract. Plan for 30 training days = 2 x 30 = \$ 60. Then 20 x \$ 60 = \$ 1200</p> <p>5. Travel costs are based on round trip ticket per individual based on Government contract quoted by Carlson travel on 4 &amp; 6 Nov 98.</p> <p>6. Housing contract is for 12 rooms (an entire floor for Army use) for \$ 490 per room or total of \$ 5880 per month.</p> <p>Carlson Travel 916-225-5370</p>								

## APPE. XA1 Upfront Costs

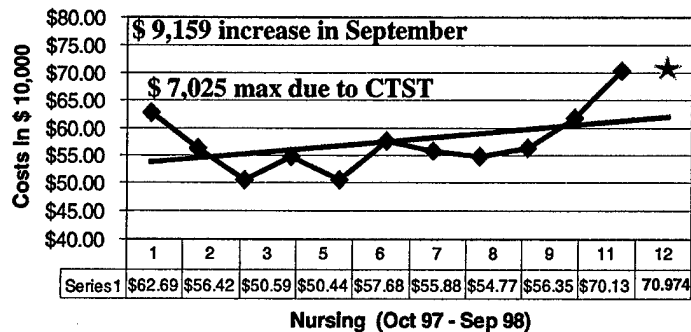
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## Cost Analysis

### Nursing Contract Staff Costs

Slope + 736

Affected Areas (ER, OR, ICU &amp; CT)

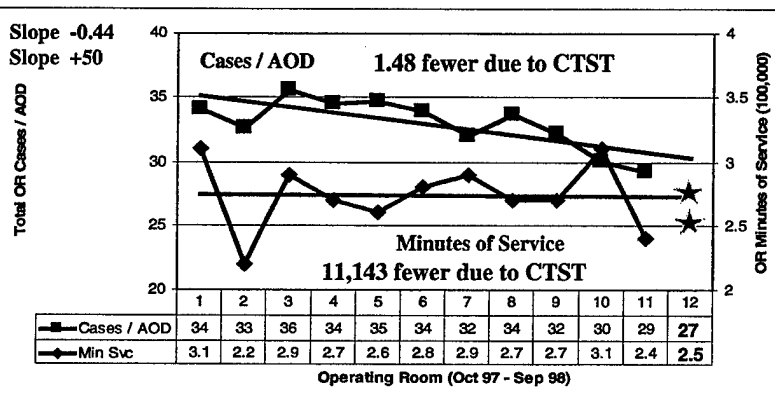


No Physician Contract Costs Incurred

BTGH

## Cost Analysis

### Lost Productivity (Operating Room)

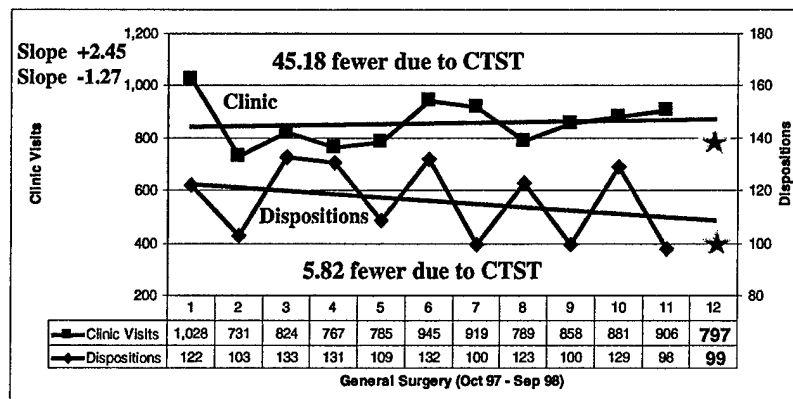
Slope -0.44  
Slope +50

Total OR Cases / AOD and Minutes of Service

BTGH

## Cost Analysis

### Lost Productivity (Gen Surg)

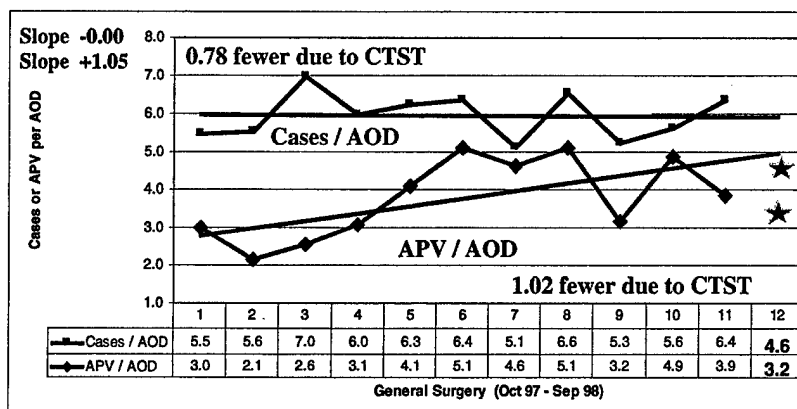


### Clinic Visits and Dispositions

BTGH

## Cost Analysis

### Lost Productivity (Gen Surg)

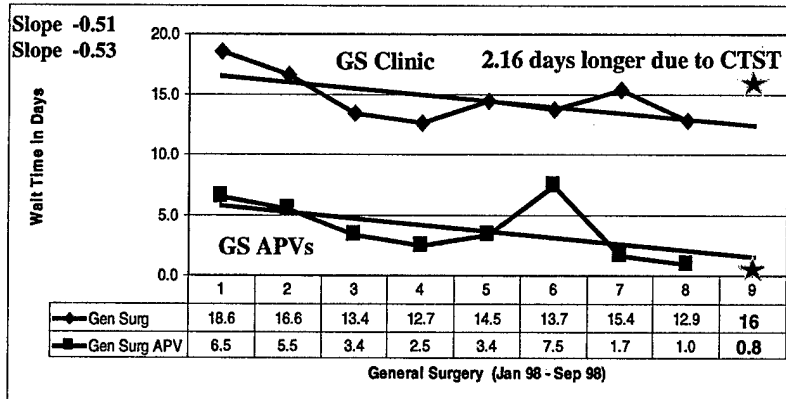


### Cases / AOD and APV / AOD

BTGH

## Cost Analysis Lost Productivity (Gen Surg)

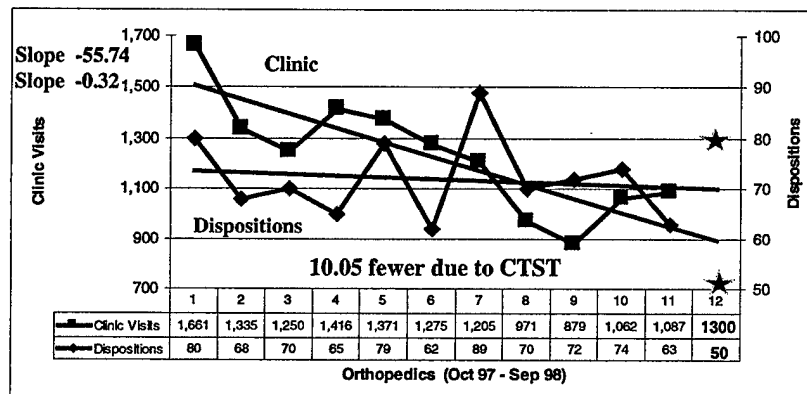
No Measurable Impact On Tricare Access Standards



### Clinic and APV Wait Times

BTGH

## Cost Analysis Lost Productivity (Ortho)

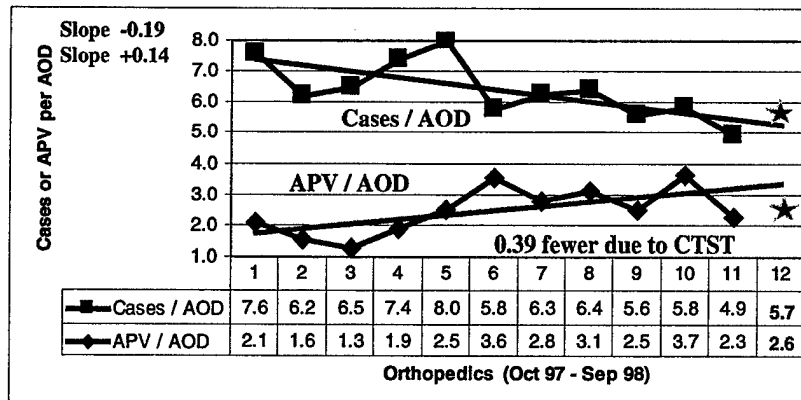


### Clinic Visits and Dispositions

BTGH

## Cost Analysis

### Lost Productivity (Ortho)



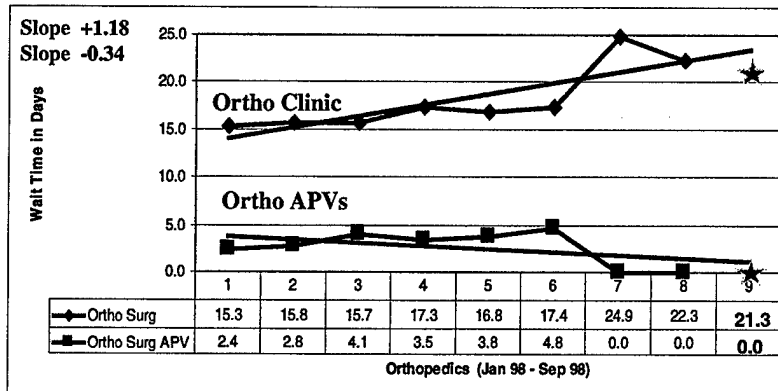
### Cases / AOD and APV / AOD

BTGH

## Cost Analysis

### Lost Productivity (Ortho)

No Measurable Impact On Tricare Access Standards



### Clinic and APV Wait Times

BTGH

APPEAL C  
Opportunity Costs

Month	RN				LVN				RN				LVN			
	Amb\$/Hr	Hours	\$	ED	\$/Hr	Hours	2E (C/T)	\$	2E (C/T)	OR\$/Hr	Hours	\$	OR	ICU/OR/\$	Hours	\$
Oct-97	\$28.32	520.75	\$12,717		\$22.00	149.00	\$3,278			\$28.32	1510.25	\$42,770		\$22.30	0.00	\$0
Nov-97	\$28.32	511.75	\$12,410		\$22.00	110.25	\$2,426			\$28.32	1216.50	\$34,451		\$22.30	0.00	\$0
Dec-97	\$28.32	496.25	\$12,461		\$22.00	22.50	\$495			\$28.32	1118.50	\$31,676		\$22.30	0.00	\$0
Jan-98	\$28.32	654.00	\$16,474		\$22.00	6.75	\$149			\$28.32	1162.25	\$32,915		\$22.30	160.00	\$3,568
Feb-98	\$28.32	537.75	\$13,567		\$22.00	8.00	\$176			\$28.32	1112.75	\$31,513		\$22.30	152.00	\$3,390
Mar-98	\$28.32	656.25	\$16,702		\$22.00	14.00	\$308			\$28.32	1212.75	\$34,345		\$22.30	184.00	\$4,103
Apr-98	\$28.32	607.00	\$15,618		\$22.00	25.00	\$550			\$28.32	1189.75	\$33,694		\$22.30	176.00	\$3,925
May-98	\$32.00	553.50	\$14,042		\$22.00	56.75	\$1,249			\$28.32	1212.75	\$34,345		\$24.00	160.00	\$3,840
Jun-98	\$32.00	445.00	\$11,214		\$22.00	72.00	\$1,584			\$28.32	1199.50	\$33,970		\$24.00	176.00	\$4,224
Jul-98	\$32.00	509.00	\$12,862		\$22.00	153.50	\$3,377			\$28.32	1338.50	\$37,906		\$24.00	152.00	\$3,648
Aug-98	\$32.00	616.00	\$15,154		\$22.00	272.75	\$6,001			\$28.32	1276.75	\$36,158		\$24.00	168.00	\$4,032
Sep-98	\$32.00	586.00	\$14,474		\$22.00	230.75	\$5,077			\$28.32	1299.05	\$36,789		\$24.00	157.00	\$3,768
1	TREND	565.01	14335.05		1 TREND	138.62	3049.70	1		1 TREND	1217.74	34486.42	1	TREND	229.82	5439.23
2	Mean	555.20	13929.20		2 Mean	80.95	\$1,781.00	2		2 Mean	1231.84	\$34,885.73	2	Mean	120.73	\$2,793.60
3	StdDev	68.91	1819.43		3 StdDev	83.70	\$1,841.47	3		3 StdDev	112.50	\$3,185.95	3	StdDev	78.18	\$1,810.16
4	SLOPE	1.63	67.64		4 SLOPE	9.61	211.45	4		4 SLOPE	(2.35)	(66.55)	4	SLOPE	18.18	440.94
5	Sep-Proj	565.01	14335.05		5 Sep-Proj	138.62	3049.70	5		5 Sep-Proj	1217.74	34486.42	5	Sep-Proj	229.82	5439.23
6					6			6		6			6			
7	Proj-Act	(20.99)	(139.15)		7 Proj-Act	(92.13)	(\$2,026.80)	7		7 Proj-Act	(81.31)	(\$2,302.67)	7	Proj-Act	72.82	\$1,671.23
8	CTST	Impact	(\$69.57)		8 CTST	Impact	(\$2,026.80)	8		8 CTST	Impact	(\$767.56)	8	CTST	Impact	\$1,002.74
9					9			9		9			9			
10	Bosnia	1 Rn	2 91B		10 Bosnia			10		10 Bosnia	2 Rn	2 91d	10	Bosnia	2 Rn	2 91d
11	CTST	1 Rn	4 91B		11 CTST		1 91c	11		11 CTST	1 Rn	3 91d	11	CTST	1 Rn	3 91d
12	total	2	6		12 total		1	12		12 total	3	5	12	total	3	5

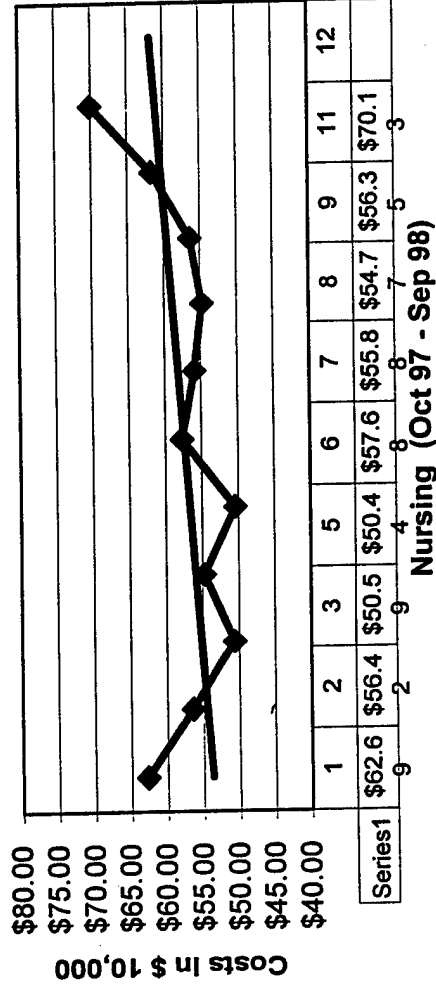
APPEAL C  
Opportunity Costs

LVN				RN							
ICU/\$	Hours	\$	Month	ICURN	Hours	\$		AA Total \$	AA Total	BAMC Total	BAMC Total
	2 S	2 S			2 S	2 S			decimal moved		decimal moved
\$22.30	44.00	\$981	Oct-97	\$28.32	104.00	\$2,945		1 \$62,691.48	\$62.69	\$207,492.52	\$207.49
\$22.30	100.00	\$2,230	Nov-97	\$28.32	173.00	\$4,899		2 \$56,416.08	\$56.42	\$206,457.00	\$206.46
\$22.30	118.50	\$2,643	Dec-97	\$28.32	117.00	\$3,313		3 \$50,587.75	\$50.59	\$184,125.75	\$184.13
\$22.30	16.00	\$357	Jan-98	\$28.32	45.00	\$1,274		4 \$54,736.88	\$54.74	\$182,486.94	\$182.49
\$22.30	45.00	\$1,004	Feb-98	\$28.32	28.00	\$793		5 \$50,442.57	\$50.44	\$175,149.68	\$175.15
\$22.30	56.00	\$1,249	Mar-98	\$28.32	34.25	\$970		6 \$57,676.60	\$57.68	\$181,637.87	\$181.64
\$22.30	82.00	\$1,829	Apr-98	\$28.32	9.50	\$269		7 \$55,884.27	\$55.88	\$205,193.09	\$205.19
\$24.00	0.00	\$0	May-98	\$32.00	40.50	\$1,296		8 \$54,771.88	\$54.77	\$211,381.11	\$211.38
\$24.00	139.75	\$3,354	Jun-98	\$32.00	62.50	\$2,000		9 \$56,345.84	\$56.35	\$222,241.12	\$222.24
\$24.00	109.50	\$2,628	Jul-98	\$32.00	39.25	\$1,256		10 \$61,677.75	\$61.68	\$245,913.24	\$245.91
\$24.00	221.25	\$5,310	Aug-98	\$32.00	108.50	\$3,472		11 \$70,125.66	\$70.13	\$252,791.46	\$252.79
\$24.00	384.75	\$9,234	Sep-98	\$32.00	51.00	\$1,632		12 \$70,973.80	\$70.97	\$234,669.12	\$234.67
								mean	\$57,396.07	\$57.40	\$206,806.34
1 TREND	138.89	3352.05			30.85	1151.99		slope	\$736.40	\$0.74	\$5,331.80
2 Mean	84.73	\$1,962.13			69.23	\$2,044.40		Sep proj	\$61,814.45	\$61.81	\$238,797.12
3 StdDev	62.95	\$1,515.21			49.65	\$1,423.37		TREND	\$61,814.45	\$61.81	\$238,797.12
4 SLOPE	9.03	231.65			(6.40)	(148.74)		proj - act	(\$9,159.35)	(\$9.16)	\$4,128.00
5 Sep-Proj	138.89	3352.05			30.85	1151.99		StdDev	\$5,670.15	\$5.67	\$25,783.28
6											
7 Proj-Act	(245.86)	(\$5,881.95)			(20.15)	(\$480.01)					
8 CTST	Impact	(\$3,921.30)			Impact	(\$240.00)					
9								CTST	Impact	(\$7,025.24)	
10 Bosnia	1 Rn	191c			2 Rn						
11 CTST	1 Rn	291c			1 Rn						
12 total	2	4			3	8					
								LVN	FTE at \$24	7025.24	1.74
								RN	FTE at \$32		1.31
								mix lvn/m	FTE at \$ 28		1.49



APPE. X C  
Opportunity Costs

Affected Areas (ER, OR, ICU & CT)



Sep proj = 61,814 actual = 70,974 used \$ 9,159 more affected area.

CTST impact on affected areas amounts to \$ 7,025.24 of the \$ 9,159 increase noted in Sep 98.

APPEL

Note the increase in emergency rate which has a high correlation to cancelation rate. This indicates that the increased number of emergency cases led to a reduction in total cases.

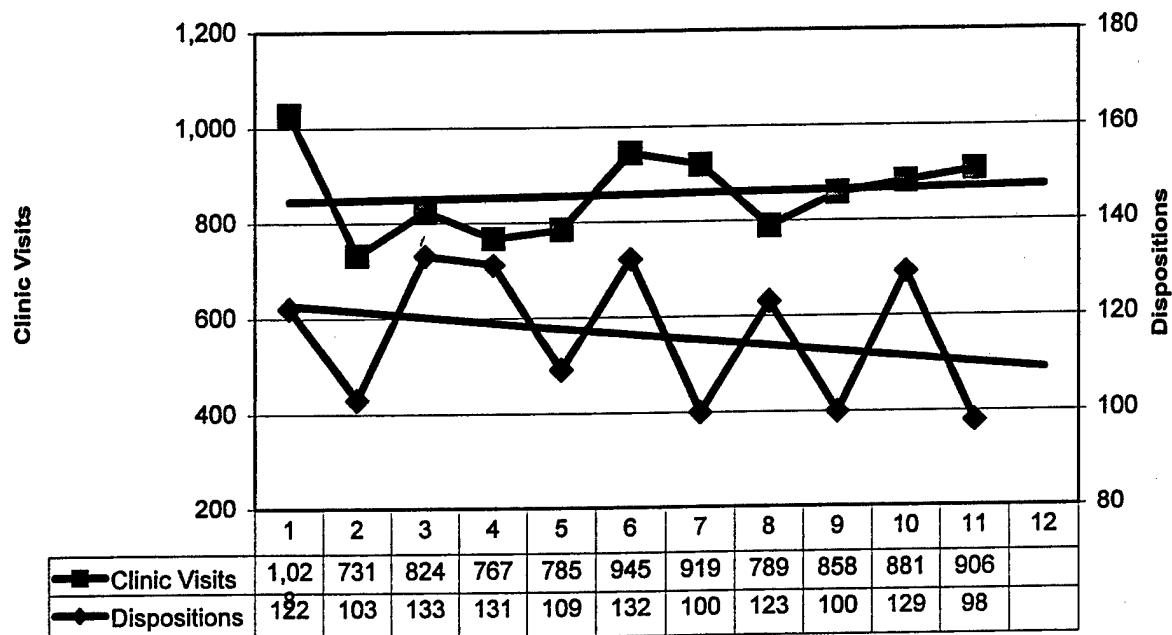
APPEL, LC

## Opportunity Costs

[illegible]

**APPENDIX C**  
**Opportunity Costs**

Month - Year	Gen Surg Cases	Operating Days Avail	Cases / Avail Operating Day							
									GS APV	
							GS APV	GS Visits	per AOD	GS Disp
Oct-97	115	21	5.5	1	1	63		1,028	3.0	122
Nov-97	89	16	5.6	2	2	45		731	2.1	103
Dec-97	126	18	7.0	3	3	54		824	2.6	133
Jan-98	114	19	6.0	4	4	65		767	3.1	131
Feb-98	119	19	6.3	5	5	86		785	4.1	109
Mar-98	140	22	6.4	6	6	107		945	5.1	132
Apr-98	113	22	5.1	7	7	97		919	4.6	100
May-98	131	20	6.6	8	8	107		789	5.1	123
Jun-98	105	20	5.3	9	9	67		858	3.2	100
Jul-98	124	22	5.6	10	10	102		881	4.9	129
Aug-98	134	21	6.4	11	11	81		906	3.9	98
SLOPE	1.82	0.32	(0.00)		12	4.11		2.45	0.20	(1.27)
Mean	119.09	20.00	5.97			79.45		857.55	3.78	116.36
Sep Project	130.00	21.91	5.94			104.11		872.27	4.96	108.73
Std Dev	14.34	1.90	0.60			22.02		88.70	1.05	14.41
Sep Actual	97	21	4.6			68		797	3.2	99
Proj - Act		delta from proj	1.3			36.1		75.3	1.7	9.7
		% from proj	22.24%			34.68%		8.63%	34.68%	8.95%
		% due to CTST	13.35%			20.81%		5.18%	20.81%	5.37%



**General Surgery (Oct 97 - Sep 98)**

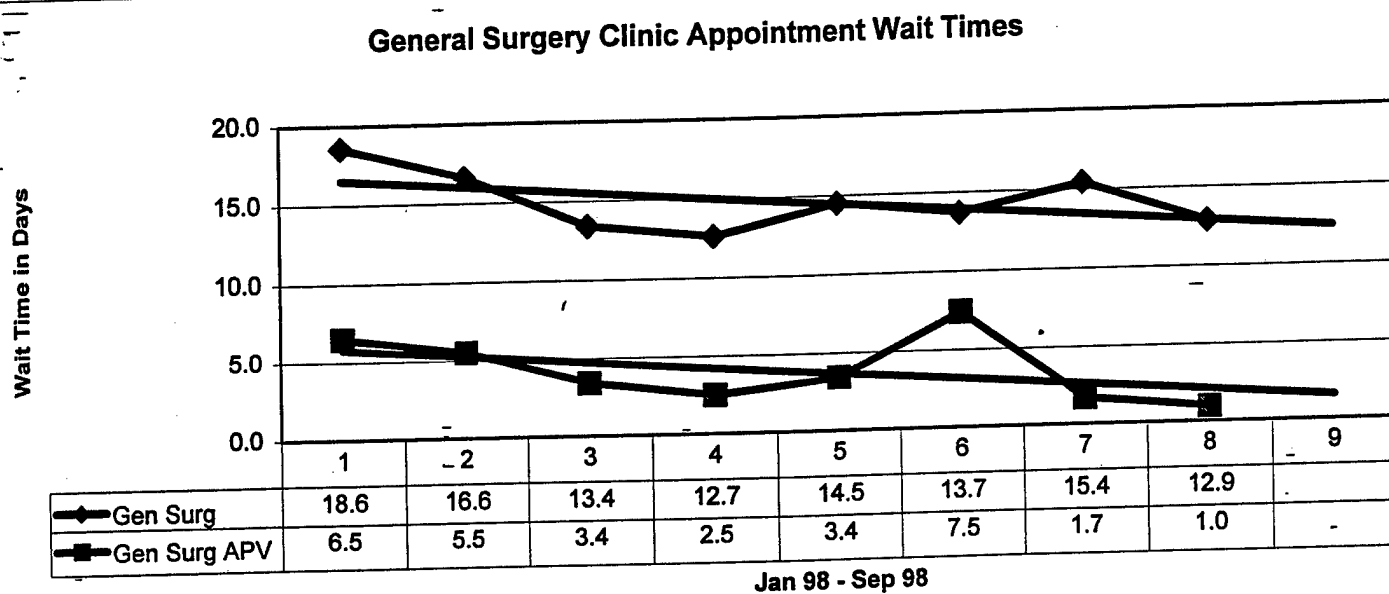
## APPENDIX C

### Opportunity Costs

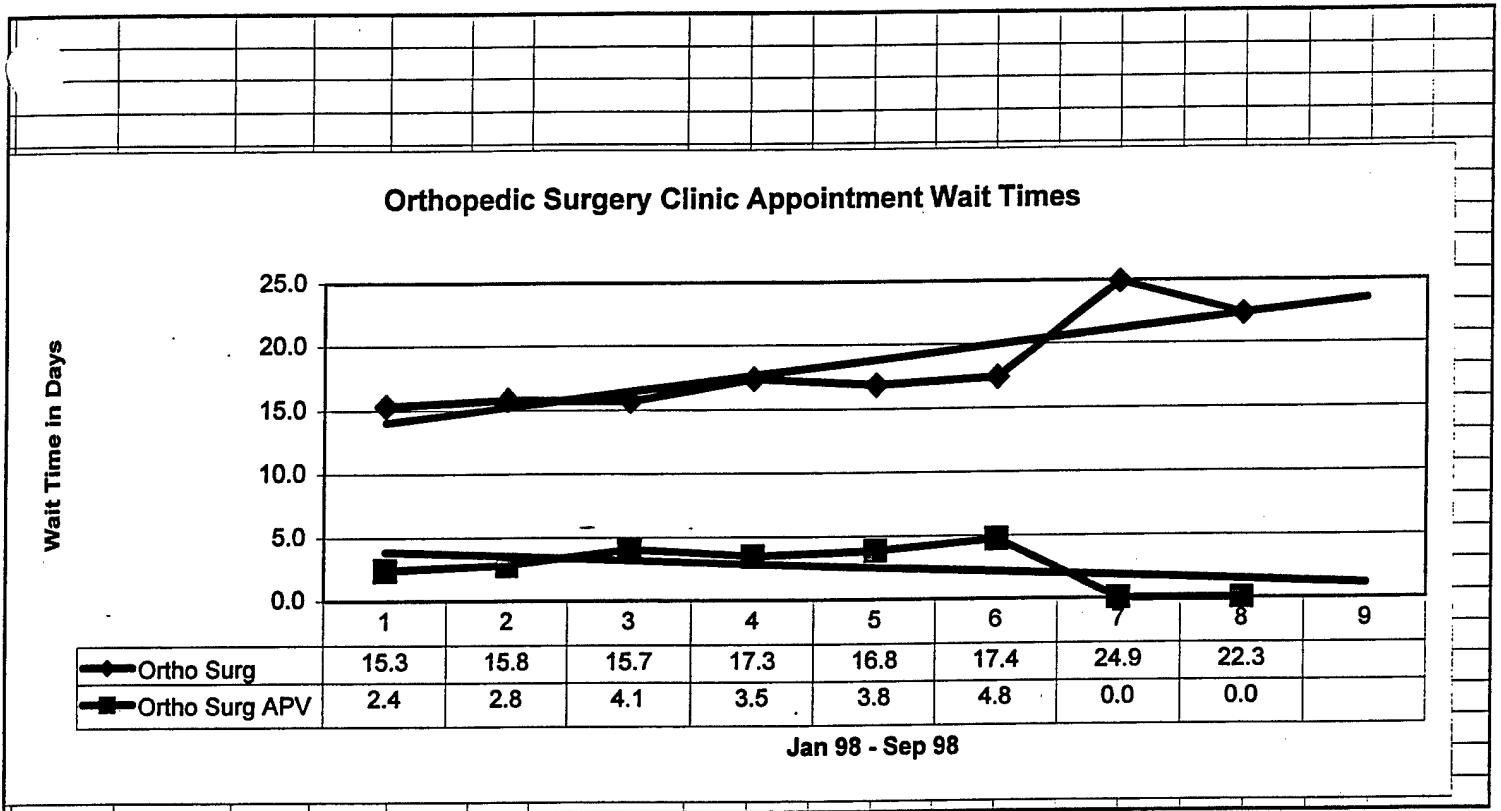
### Cases or APV per AOD

## APPENDIX C

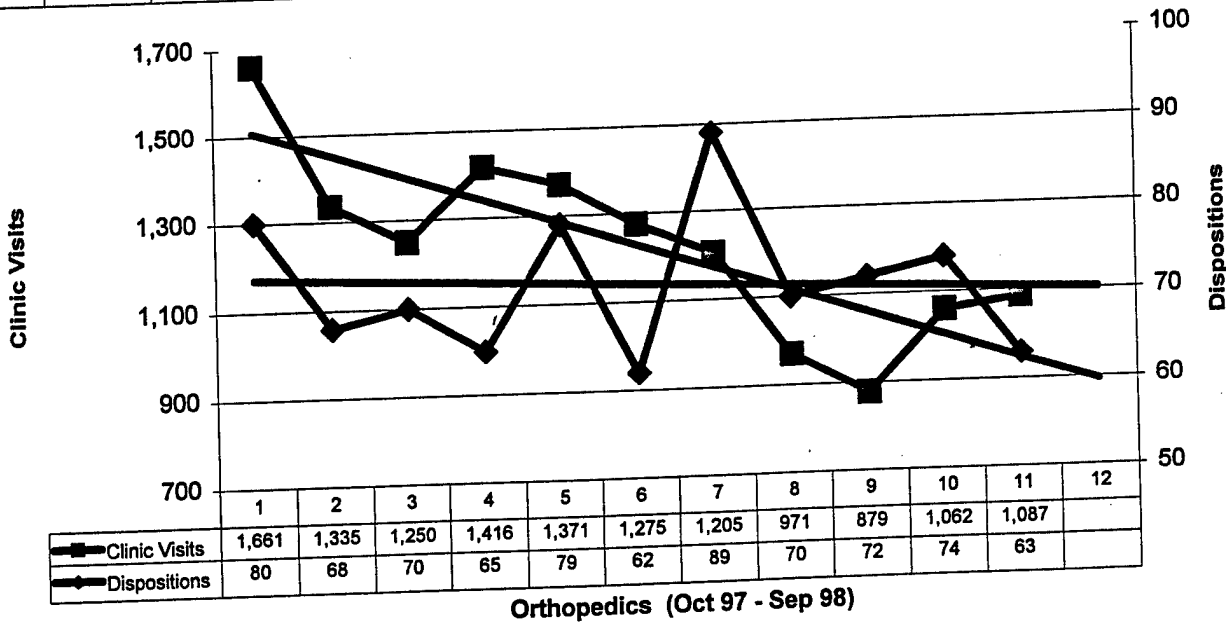
### Opportunity Costs

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APPENDIX C  
Opportunity Costs



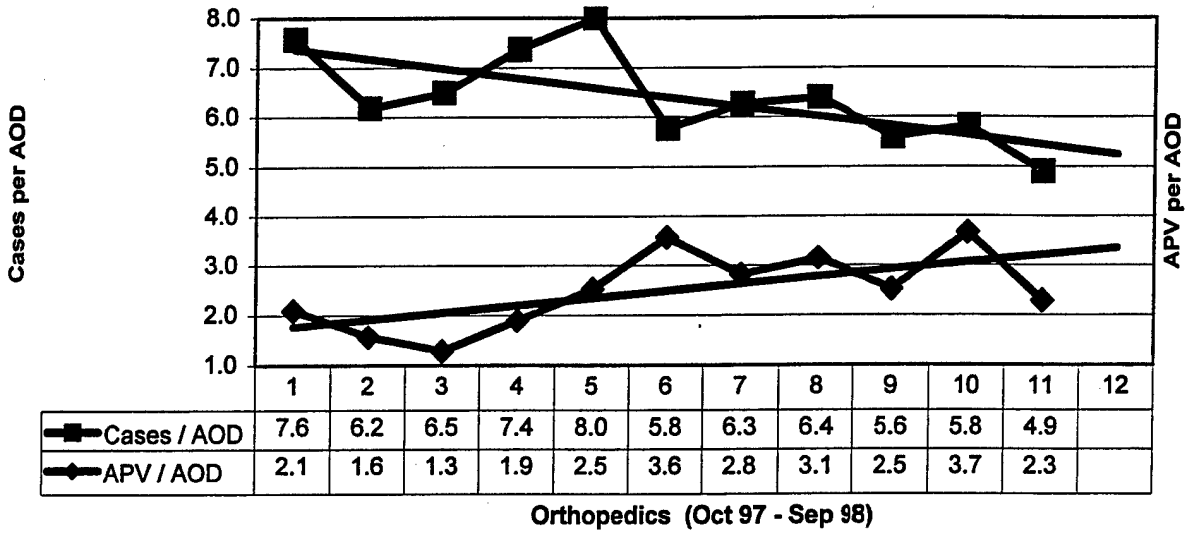
## Opportunity Costs

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## APPENDIX C

### Opportunity Costs

[illegible]

## SUMMARY / RECOMMENDATIONS

### COMBAT TRAUMA SURGICAL TRAINING (CTST) of a FORWARD SURGICAL TEAM (FST)

#### The Ben Taub Pilot Project (September 1998)

1. Recommend the execution of a one year feasibility study establishing Ben Taub General Hospital (BTGH) as a permanent Joint Trauma Training Center (JTTC) designed to maximize the surgical readiness of deployable surgical units.

2. Summary Facts and Assumptions Supporting the Recommendation:

a. The Great Plains Regional Medical Command (GPRMC) pilot study of unit-level CTST (defined as trauma sustainment training for military surgical personnel through Level I civilian trauma centers) was conducted at BTGH in September 1998. The pilot study used a twenty soldier Army Forward Surgical Team (FST) slice from the 41<sup>st</sup> Combat Support Hospital (CSH), Fort Sam Houston, Texas. A cost/benefit analysis of the pilot study demonstrated the rotation had a favorable cost/benefit ratio:

(1) Due to BTGH provision of food and quarters, the upfront costs to train the personnel for one month were \$4,706.

(2) The opportunity costs (contract backfill and lost productivity) GPRMC hospitals paid to conduct the pilot program were minimal.

(3) The CTST documented a FST training benefit that was linked to increased unit surgical readiness.

b. The pilot study demonstrated BTGH is potentially an ideal site for continued CTST of surgical units for the following reasons:

(1) The Chief of Staff at BTGH, Dr. Kenneth Mattox, is a renowned civilian trauma expert and is a strong supporter of CTST.

(2) BTGH is a pre-eminent clinical and research trauma center with significant contributions to the trauma literature.

(3) BTGH has a high volume of trauma cases (approximately 2800 cases per year with 900 of these secondary to penetrating trauma) appropriate for CTST.

(4) CTST opportunities at BTGH are optimal. BTGH is a County Hospital with adequate but austere funding and staffing. The BTGH staff welcomes the opportunity to share the trauma workload with well-trained, fully certified military personnel. Furthermore, the trauma services provided at BTGH are totally under the control of the General Surgery Service.

under Dr. Mattox. There are no emergency room physicians, trauma fellows, or intensivists to compete for training opportunities.

(5) Dr. Mattox and BTGH are willing to permit, under BTGH supervision and guidance, CTST at the individual provider, team, and unit level.

(6) BTGH is willing to conclude further non-gratuitous CTST contracts with the Department of Defense (DOD). Inexpensive quarters are available and BTGH will provide free meals to the military personnel undergoing CTST. These cost-saving measures act to reimburse the DOD for the health care services provided by the CTST personnel working and training at BTGH.

(7) Temporary Texas State licensing mechanisms exist to license the military surgeons, anesthesiologists, nurses, and licensed vocational nurses for CTST at nominal cost. Operating room technicians and emergency medical technicians do not require Texas licensing.

c. The purposes of the pilot study, as stated in the 27 January 1999 Report of Combat Trauma Surgical Training at Ben Taub General Hospital, were met.

(1) The pilot demonstrated that CTST of an entire FST was legally possible.

(2) The pilot demonstrated that non-gratuitous CTST, with a measure of reimbursement for health care services rendered, was contractually possible.

(3) A training plan was developed that measured CTST benefit and linked that benefit to increased FST surgical readiness.

(4) A cost analysis of the CTST pilot rotation to include upfront costs (i.e., licenses, travel, housing, and per diem) and opportunity costs (i.e., lost productivity or replacement costs the military treatment facilities incurred while providing pilot personnel for CTST at BTGH) was conducted.

(5) The costs and training benefits of the pilot project were reported to the DMRTEC, the DMRTI, and Army Medical Command channels.

d. Based on the pilot study data (i.e., favorable cost/benefit ratio and favorable site), the GPRMC feels that BTGH warrants further study as a site for ongoing CTST. The study will evaluate the feasibility of establishing BTGH as a JTTC. The rationale supporting the establishment of a JTTC is that surgical unit readiness will be maximized through periodic unit-level field training (e.g., METL training conducted at the Joint Readiness Training Center) supplemented by hands on unit-level surgical training (i.e., CTST conducted at BTGH). The JTTC rotations could be conducted one unit per month (excluding December and July) throughout the year targeting those units at greatest risk for deployment. If the individual services or DOD decided to establish CTST requirements for all surgical units, then the JTTC developed at BTGH could be used as a model to expand the program to other civilian trauma centers.

### 3. JTTC Feasibility Study Concept:

- a. Conduct a one year JTTC feasibility study at BTGH from July 1999 to June 2000.
- b. Provide permanent military staff to serve as Observer Controllers to execute the JTTC Feasibility Study.
- c. The US Army would be the Executive Agent for the JTTC Feasibility Study. MEDCOM would provide OC staffing, provide funding for the TO&E rotations, and coordinate the scheduling of rotations with Forces Command (FORSCOM). The Army Medical Department Center and School (AMEDD C&S) would provide command and control of the OC personnel as well as administrative and support. FORSCOM would assign specific units for "fenced in" training rotations. The Defense Medical Readiness Training Institute (DMRTI) would approach the Air Force and Navy to first consider supplementing the OC staff and second to initiate the development of service appropriate training plans and scheduled unit rotations.
- d. Three consecutive Army field unit rotations one each from the III, XVIII Airborne, and I Corps would occur in September through November 1999.
- e. In December 1999, MEDCOM would conduct an interim review of the JTTC Feasibility Study data and summarize its findings and recommendations into a report. In January 2000, the JTTC Feasibility Study Report would be presented to the Defense Medical Readiness Training and Education Council (DMRTEC) and to the Assistant Secretary of Defense for Health Affairs. A decision to institutionalize BTGH as a permanent JTTC could then be made at the MEDCOM or Department of Defense (DOD) level.
- f. It is assumed joint CTST rotations would be conducted from February through June 2000.

### 4. Military Staff Requirements At BTGH:

a. BTGH civilian staffing levels are extremely austere considering their daily workload. For the pilot study, BTGH made it clear they simply did not have enough staff to administer the CTST of military personnel who rotate through their facility. Therefore, the GPRMC detailed one General Surgeon, one Emergency Room Nurse, and one Health Care Administrator to BTGH as CTST Observer/Controllers (OCs). The three OCs reported to BTGH weeks in advance of the 41<sup>st</sup> CSH pilot trainees conducting CTST. The OCs:

(1) Conducted advance party operations for the pilot personnel through coordinating housing, parking, pagers, BTGH security badges, and the remaining myriad of administrative details necessary.

(2) Conducted liaison operations with the BTGH trauma surgery and nursing staff.

- (3) Devised the CTST training plan and BTGH work assignments/schedules.
- (4) Provided the CTST trainees with a site and duties/responsibilities orientation to BTGH.
- (5) Assessed the baseline trauma expertise of the CTST personnel.
- (6) In conjunction with BTGH staff, coordinated the trauma education, training, monitoring, and supervision of the CTST personnel to maximize their training opportunities.
- (7) Assessed the CTST performance of the rotating personnel at the individual, team, and unit levels.
- (8) Conducted After Action Reviews of the CTST performance with the 41<sup>st</sup> CSH.
- (9) Reported the CTST results to the GPRMC conducting the pilot study.

b. The training benefit demonstrated by the pilot study must be viewed considering two factors. First, the GPRMC committed to BTGH on-site OCs to ensure unit-level CTST success. Second, the surgical personnel conducting the pilot study had an above average baseline level of trauma experience and expertise (i.e., the pilot personnel were pulled from duty assignments at the Army's two trauma centers) prior to conducting their CTST. The pilot personnel required minimal individual trauma education, training, monitoring, or supervision and were able to readily seize the host of CTST opportunities available at BTGH.

c. If BTGH is going to serve as a site for ongoing CTST rotations then military OCs must be assigned on-site. BTGH is unable to provide the necessary administrative and supervisory CTST support. Furthermore, it is reasonable to assume that the need for individual orientation, trauma education, training, monitoring, and supervision will be increased for subsequent CTST rotations at BTGH, compared to the pilot study. Subsequent CTST rotations will target deployable surgical personnel and units whose trauma proficiency is marginal due to lack of peacetime exposure. For these units to conduct effective CTST over a one month rotation at an unfamiliar institution, military OCs must be on-site to provide the necessary support. This assumption is based on direct civilian input from Dr. Mattox and BTGH administrators. Furthermore, it is based on a military consensus reached by the GPRMC personnel who conducted the pilot study (September 1998) of CTST at BTGH.

d. Based on the pilot experience at BTGH, the recommended minimum OC staff required to supervise ongoing CTST unit-level rotations is listed in Table 1 below:

Table 1

Rank	Specialty	Responsibility
LTC	General Surgeon	Commander
MAJ	General Surgeon	Intensive Care Team Trainer
MAJ	Emergency Room Nurse	Resuscitation Team Trainer
MAJ	Operating Room Nurse	Surgical Procedure Team Trainer
CPT	Health Care Administrator	Executive Officer
MSG	91B EMT	NCOIC (Logistics / Support)

5. JTTC Feasibility Study Timeline: Listed below as Table 2.

Table 2

Date	Activity
Jan 99	MEDCOM approves OC staffing and funding
	JTTC Feasibility Study contract initiated with BTGH
Feb 99	GPRMC conducts its second pilot rotation (31 <sup>st</sup> CSH) to finalize its CTST model for FSTs
Mar 99	AMEDD C&S assumes command and control of the JTTC Feasibility Study
	JTTC Feasibility Study contract finalized with BTGH
	OCs selected
Apr 99	CTST rotations scheduled
	Licensing and credentialing instructions sent to scheduled units (minimum three month process to complete prior to a rotation).
Jul 99	OCs report and orient to BTGH.
Aug 99	CTST unit Commanders and Chief Nurses (for Sept – Nov 99 rotations) conduct advance party operations as necessary. –
Sep – Nov 99	CTST unit rotations
Dec 99	Interim review of JTTC Feasibility Study conducted with summary report
Jan 00	JTTC Feasibility Study Report presented to DMRTEC and ASD(HA).
Feb – Jun 00	Joint CTST unit rotations

6. JTTC FEASIBILITY STUDY COSTS:

a. The units which conduct the JTTC Feasibility Study rotations will require funding to cover temporary license fees, travel, housing, and per diem. The upfront unit rotation costs listed below include nominal temporary licensing fees for four surgeons, two nurse anesthetists, three registered nurses, and three licensed vocational nurses. It is assumed that each rotation will utilize the same low cost dormitory housing available next to BTGH in the Texas Womens University. Currently \$ 5,880 secures an entire dormitory floor of twelve double occupancy rooms for a month of CTST. This is projected to go up approximately \$ 300 beginning September 1999. Due to meals and housing being provided by the government or BTGH the

trainee per diem should be limited to the incidental rate of approximately \$ 60 per person per 30 day training rotation.

b. Army upfront rotation costs for three representative units are:

I Corps (Fort Lewis)=	\$ 21,110
III Corps (Fort Hood) =	\$ 12,232
XVIII ABCorps (Fort Bragg ) =	\$ 20,470
Total Army Unit Costs =	\$ 53,812

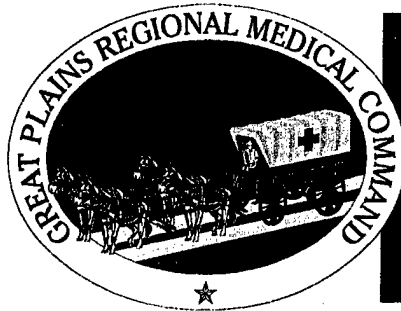
## 7. Conclusion:

a. The data from the first FST rotation through BTGH indicated that a low cost, high training benefit program for unit-level CTST was available for additional rotations. The purpose of the one year JTTC Feasibility Study is to reconfirm the low cost/high benefit aspects of the one month pilot project. If reconfirmed then senior Army decision-makers can decide whether BTGH should be permanently institutionalized to provide CTST for Corps level Army surgical units (both active duty and reserve). Furthermore, the United States Air Force and United States Navy can evaluate the program and decide whether it meets their CTST needs also.

b. The authors believe that the JTTC Feasibility Study results will lead to the creation of a permanent JTTC institution at BTGH. JTTC unit-level surgical rotations alternating with JRTC unit-level field rotations will subsequently be used to maximize the readiness of our deployable surgical units. Furthermore, the JTTC could potentially be developed as a combined military and civilian trauma research center of excellence. As such, the JTTC potential benefits to military medical readiness in terms of training, education, and research are limitless.

# **Combat Trauma Surgical Training**

## **The Ben Taub Pilot Project**



**+ Emergency**  
Trauma Center  
**→ Ben Taub**  
**General Hospital**

**Colonel Cass W. Conaway, MD**  
**Major Kyle D. Campbell, CHE**

### **The Ben Taub Pilot Project**



**September 1998**



## Combat Trauma Surgical Training (1996)

- ◆ Congressional Demo Project
- ◆ Defense Medical Readiness Training & Education Council (DMRTEC)
- ◆ Defense Medical Readiness Training Institute (DMRTI)
- ◆ Combat Trauma Surgical Committee (CTSC)

**2 / 2 / 20 / 20 Standard**

## Combat Trauma Surgical Training DMRTEC (September 1997)

- ◆ Tri-Service Progress Report
- ◆ Decentralized Execution
- ◆ Surgeon Focus (Gratuitous)
  - High Cost
  - Low Benefit
  - No Readiness Link

## GPRMC Revision Of CTST

Centralized Pilot	Model (\$)
FST (1 Month)	Team*
Training Plan	Benefit
METL Derived	Readiness
Cost Benefit Analysis	Objective Data

**Target: Senior Decision Makers**

## FST Pilot Study

- ◆ Twenty Personnel (41st CSH)
  - 3 x General Surgeons
  - 1 x Orthopedic Surgeon
  - 2 x CRNA
  - 3 x RN
  - 1 x MSC
  - 10 x Enlisted (EMT / LVN / OR Tech)
- ◆ Hand Picked
- ◆ Hours Worked

## FST Pilot Phases

### Week 1:

Orientation

Individual Training

### Week 2 & 3:

Team Training (ER/OR/ICU)

Cross Training (EMS/ER)

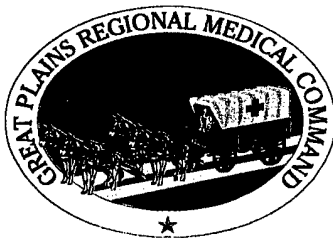
### Week 4:

Collective / Unit Training

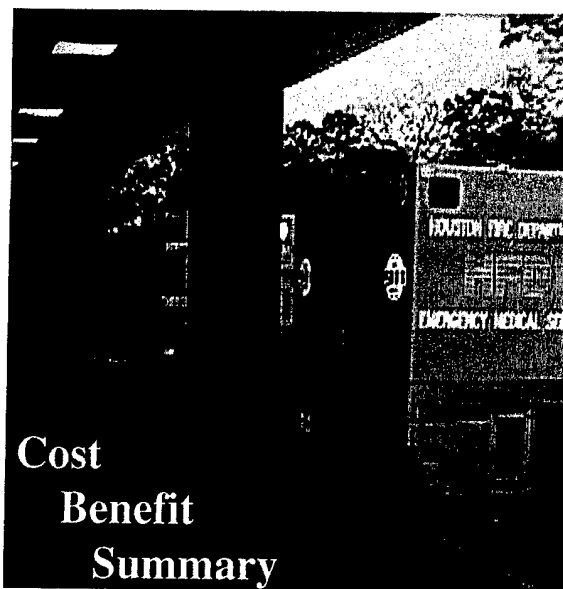


**September 1998**

## Forward Surgical Team Pilot Study



Cost  
Benefit  
Summary



## Cost Analysis

### Upfront Costs

- ◆ Travel
- ◆ License Fees
- ◆ Per Diem
- ◆ Housing

## Cost Analysis

### BAMC Upfront Costs

	<u>Our Cost</u>	<u>Full Cost</u>
Travel	\$ 2,041	\$ 2,578
MD License	\$ 0	\$ 200
RN License	\$ 100	\$ 500
LVN License	\$ 0	\$ 270
Per Diem	\$ 2,565	\$ 22,420
Housing	\$ 0	\$ 46,200
<b>Total:</b>	<b>\$ 4,706</b>	<b>\$ 72,168</b>

## Cost Analysis

### Corps Upfront Costs

	<u>Fort Hood</u>	<u>Fort Bragg</u>	<u>Fort Lewis</u>
Travel	\$ 3,042	\$ 11,280	\$ 11,920
License	\$ 970	\$ 970	\$ 970
Per Diem	\$ 2,340	\$ 2,340	\$ 2,340
Housing	\$ 5,880	\$ 5,880	\$ 5,880
<b>Total:</b>	<b>\$ 12,232</b>	<b>\$ 20,470</b>	<b>\$ 21,110</b>

**\*\* Bragg and Lewis utilize Air Travel**

## Cost Analysis

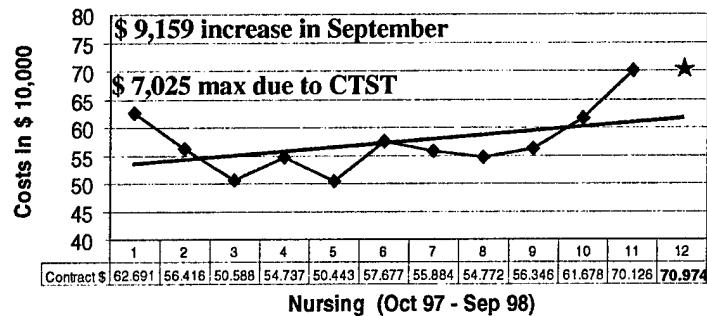
### Opportunity Costs

- ◆ Contract Hours
- ◆ Lost Productivity

## Cost Analysis

### Nursing Contract Staff Costs

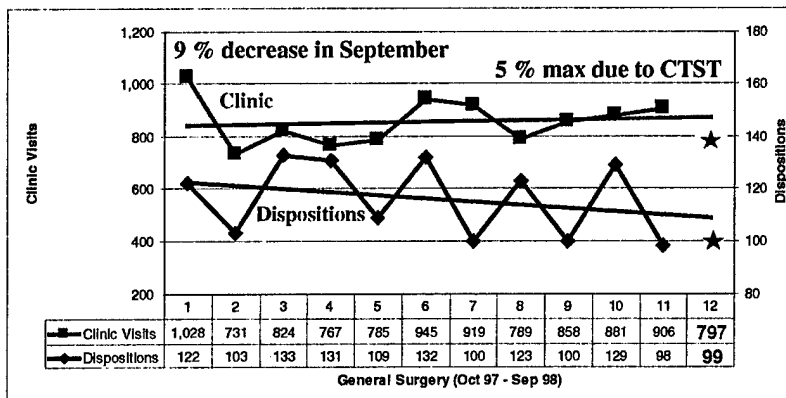
Affected Areas (ER, OR, ICU & CT)



No Physician Contract Costs Incurred

## Cost Analysis

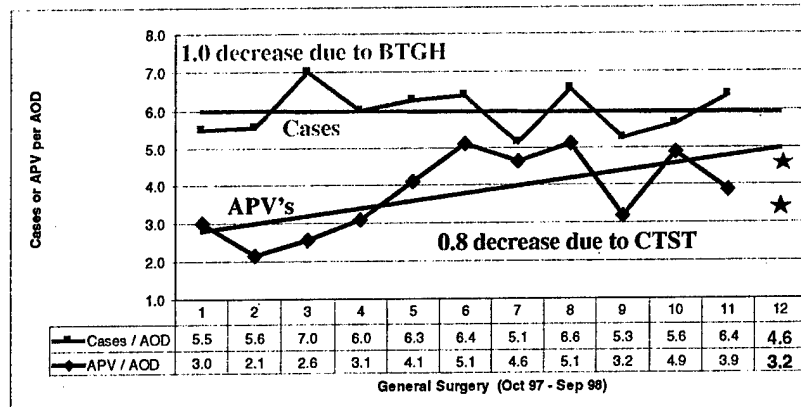
### Lost Productivity (Gen Surg)



Clinic Visits and Dispositions

## Cost Analysis

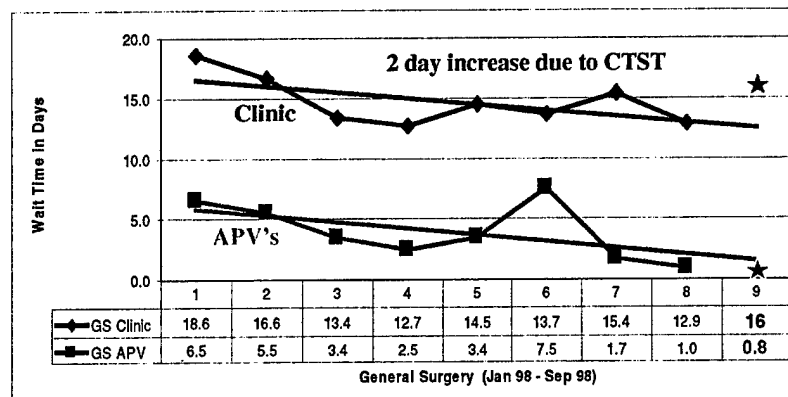
### Lost Productivity (Gen Surg)



Cases / AOD and APV / AOD

## Cost Analysis

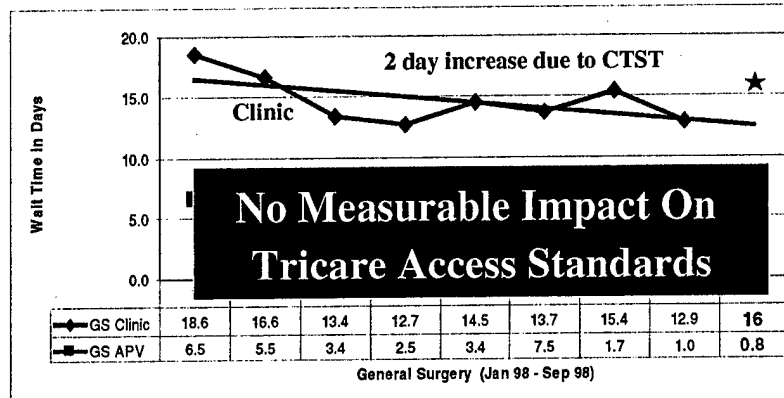
### Lost Productivity (Gen Surg)



Clinic and APV Wait Times

## Cost Analysis

### Lost Productivity (Gen Surg)



Clinic and APV Wait Times

BTGH

## Training Plan

### Objectives X 6

1. Individual Training
2. Collective Training
3. Unit Training
4. Quality Outcomes
5. Modify Protocols
6. FST Confidence



BTGH



## Step 1: Individual Training

### General Surgeons (Tool: Case Logs)

Surgeons			Cases				
Surgeon	Call	Admission	Primary	Secondary	ER	Elective	Total
A	9	22	12	5	4	0	21
B	9	34	16	6	4	6	32
C	10	40	14	4	7	8	33
Total	28	96	42	15	15	14	86
Mean	9.3	32	14	5	5	4.7	28.7

Standards: CTSC (20) RRC (16)

## General Surgeons

### ATC and BTGH

	ATC (prior yr)	ATC (mth)
Calls	114	9.5
Cases	20	1.7
Cases / Call	0.175	0.175
Penetrating	55%	55%
ISS>15	40%	40%

Trauma Case Experience Of 3 General Surgeons Prior To BTGH Rotation.

## General Surgeons

### ATC and BTGH

	ATC (mth)	BTGH (mth)	BTGH (intensity)
Calls	9.5	28	3.0
Cases	1.7	42	25.2
Cases / Call	0.175	1.5	8.6
Penetrating	55%	57%	=
ISS>15	40%	57%	1.4

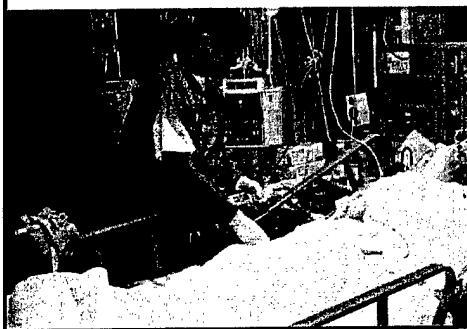
## General Surgeons (ATC and BTGH)

	<u>Cases per Trauma Event</u>
ATC (Mean)	0.175
BTGH (Mean)	1.5
Persian Gulf (Mean)	1.5
BTGH (Max)	4.0
Somalia (Max)	5.0

## Step 1: Individual Training

Enlisted Personnel ARTEP Tasks (Tool: Case Logs)

<u>MOS</u>	<u>JOB</u>	<u>% Performed</u>	<u>% Exposure</u>
91B	EMT	57	71
91C	LVN	82	94
91D	OR Tech	69	79



**Standard:**  
% Performed Competently

BTGH

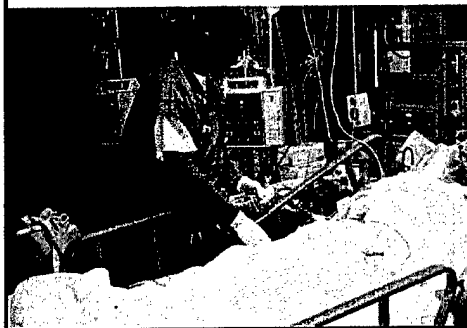
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## Step 1: Individual Training

Enlisted Personnel ARTEP Tasks (Tool: Case Logs)

66F and 66H  
> 90% of BAMC DON identified Critical Tasks  
were Performed or Assisted



**Standard:**  
% Performed Competently

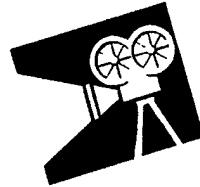
BTGH

Encl 6

4

## Step 2: Collective Training Tasks

Tool: Video



Task

Team

Pre-operative    **Resuscitation**

Intra-operative    OR

Post-operative    ICU

**Standard: SME Review**

## Step 2: Collective Training Tasks

Tool: After Action Reviews



**Standard: BTGH Experts**

## Step 3: Unit Training

Tool: Case Logs

	<u>FST</u>	<u>BTGH</u>
HRS	72	72
Resuscitations		47
OR & ICU	30	16
Diagnoses	35	32

Standard: FST Doctrine  
(FM 8-10-14-TTP)

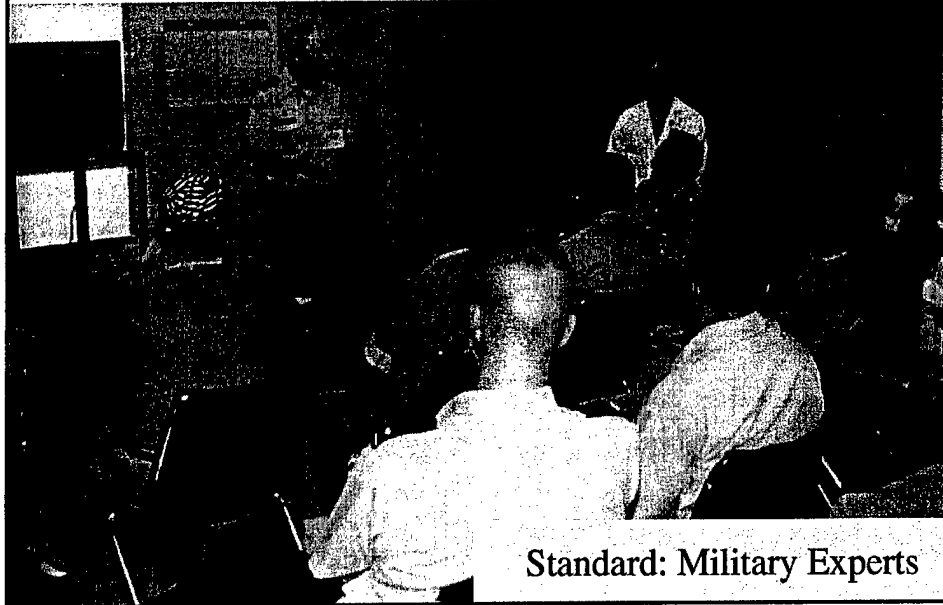


## Step 4: Quality Outcomes

<u>Level of Performance</u>	<u>Tool</u>	<u>Standard</u>
Unit	TRISS	1/42
Team Efficiency	Audit Filter	0
Team Competency	AARs	Experts (+)
Surgical Judgement	AM / M+M	Experts (+)
Task Competency	Daily Critique	Supervisor (+)

## Step 5: Modify Protocols

Tool: After Action Reviews



Standard: Military Experts

GPRMC

## Step 6: FST Confidence

Tool: Survey

Question	Sig.
I am confident of the ability of the FST:	
to function as an effective trauma team caring for combat casualties at the level of the FST.	0.001
to perform resuscitation necessary for combat casualties at the level of the FST.	0.002
to perform surgery necessary for combat casualty care at the level of the FST.	0.008

Standard: Statistical Significance

## Step 6: FST Confidence

Tool: Survey

Question	Sig.
<b>I am confident of the ability of the FST:</b>	
to function as an effective trauma team caring for trauma victims at BAMC.	<b>0.001</b>
to perform resuscitation necessary for trauma victims at BAMC.	<b>0.015</b>
to perform surgery necessary for trauma victims at BAMC.	<b>0.016</b>

Standard: Statistical Significance

## Training Plan

- ✓ Individual Training
- ✓ Collective Training
- ✓ Unit Training
- ✓ Quality Outcomes
- ✓ Modify Protocols
- ✓ FST Confidence
- ↑ **READINESS**



## Summary

- ◆ Achieved Pilot Goals
  - Training Model Established
  - Team Training Possible
  - Measurable Training Benefit
  - Link to Readiness
  - Cost Analysis Model Established

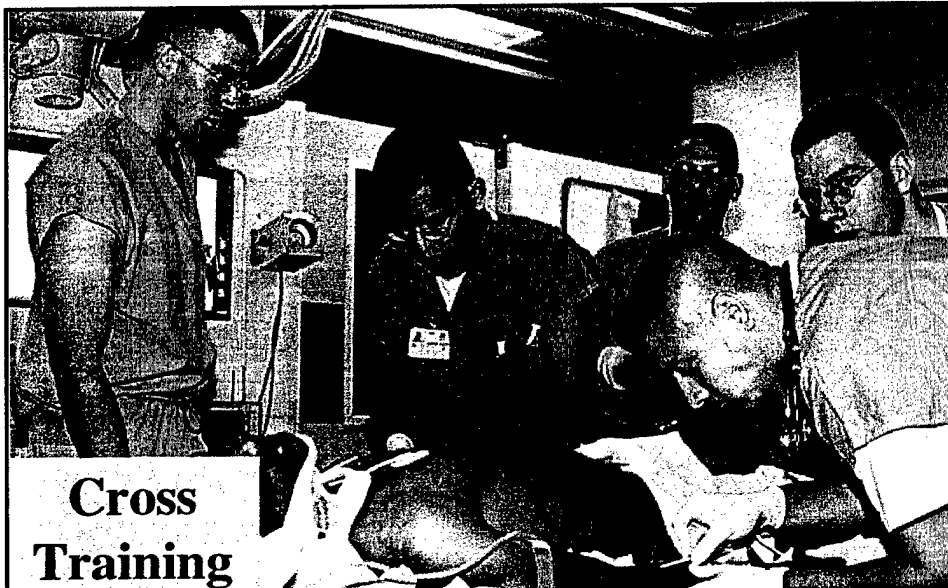
## Summary

- ◆ Achieved Pilot Goals
- ◆ BTGH Optimal CTST Site
  - ↑ Multiple Penetrating Trauma
  - ↓ Staff ↓ Resources
  - ↓ Competition (Integrated Systems)



## Summary

- ◆ Achieved Pilot Goals
- ◆ BTGH Optimal CTST Site
  - ↑ Multiple Penetrating Trauma
  - ↓ Staff ↓ Resources
  - ↓ Competition (Integrated Systems)
  - ↑ Cross Training



### Cross Training

"Riding with EMS was a good experience. Of 4 GSW victims brought into BTGH, I was at the scene with 3 of them."

## Summary

- ◆ Achieved Pilot Goals
- ◆ BTGH Optimal CTST Site
  - ↑ Multiple Penetrating Trauma
  - ↓ Staff ↓ Resources
  - ↓ Competition (Integrated Systems)
  - ↑ Cross Training
  - ↑ Scope Of Practice

## Scope Of Practice

“I have done more trauma anesthesia in one month at BTGH than in my seven years as an Army Anesthetist.”



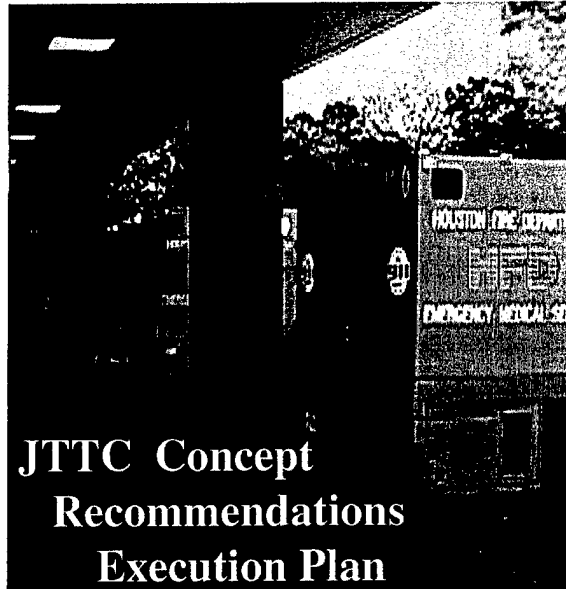
## Summary

- ◆ Achieved Pilot Goals
- ◆ BTGH Optimal CTST Site
  - ↑ Multiple Penetrating Trauma
  - ↓ Staff ↓ Resources
  - ↓ Competition (Integrated Systems)
  - ↑ Cross Training
  - ↑ Scope Of Practice
  - ↑ Unit Training

## Summary

- ◆ Achieved Pilot Goals
- ◆ BTGH Optimal CTST Site
- ◆ Low Cost / High Benefit Program

### Data for Decision Makers

**January 1999****Joint  
Trauma  
Training  
Center****Joint Trauma Training Center  
JTTC Concept**

- ◆ JTTC "Live Fire" SURGEX
- ◆ Alternate JRTC / JTTC
  - ↑ Readiness
- ◆ Institutionalize BTGH = JTTC
  - Standardize CTST
  - Ten Monthly Rotations per Year
  - Military Observer Controller (OC)
- ◆ Army "Go It Alone"

## Joint Trauma Training Center

### AC Army Rotation Costs

<u>Unit</u>	<u>Location</u>	<u>Cost</u>
274 FST-ABN	Fort Bragg	\$ 20,470
555 FST	Fort Hood	\$ 12,232
250 FST-ABN	Fort Lewis	\$ 21,110
8 FST	Hawaii	\$ 25,870
240 FST	Fort Stewart	\$ 18,590
127 FST	Korea	\$ 30,350
67 FST	Vincenza	\$ 35,910
21 CSH	Fort Hood	\$ 12,232
10 CSH	Fort Carson	\$ 15,270
86 CSH	Fort Campbell	\$ 13,910

**First Year Cost \$ 205,944**

## Joint Trauma Training Center

### AC Army Rotation Costs

<u>Unit</u>	<u>Location</u>	<u>Cost</u>
135 FST	Korea	\$ 30,350
47 CSH	Fort Lewis	\$ 21,110
28 CSH	Fort Bragg	\$ 20,470
126 FST	Fort Hood	\$ 12,232
67 CSH	Germany	\$ 23,950
115 FLD	Fort Polk	\$ 15,110
14 FLD	Fort Benning	\$ 17,990
249 GEN	Fort Gordon	\$ 16,990
85 GEN	Fort Meade	\$ 12,670
121 GEN	Korea	\$ 30,350

**Second Year Cost \$ 201,222**

## JTTC Feasibility Study

### BTGH Military Staffing

- ◆ BTGH Austere Civilian Staff
- ◆ GPRMC Pilot Study (OC's x 3)
- ◆ Military Staff
  - Administration / Orientation
  - Education / Training
  - BTGH Liaison
  - Assess / Report

## Joint Trauma Training Center

### JTTC Feasibility Study

- ◆ JTTC "Proof of Concept"
- ◆ One Year (Jul 99 - Jun 00)
  - Jul 99                      OC's Report
  - Sep - Nov 99            Corps Rotations
  - Dec                        JTTC Analysis
  - Jan                        JTTC Decision
  - Feb - Jun                Joint Rotations

# JTTC Feasibility Study

Army Staff (Jul 99)

<u>Specialty</u>	<u>Rank</u>	<u>Responsibility</u>
General Surgeon	LTC	Command
General Surgeon	MAJ	Intensive Care
CRNA	MAJ	Anesthesia
ER Nurse	MAJ	Resuscitations
OR Nurse	MAJ	OR Procedures
Executive Officer	CPT	Administration
NCOIC	SFC	Logistics / Support

# JTTC Feasibility Study

Joint Staff (Jul 99)

<u>Position</u>	<u>USA</u>	<u>Joint</u>	<u>Total</u>
General Surgeon	2	2	4
Ortho Surgeon		1	1
CRNA	1		1
ER Nurse	1		1
OR Nurse	1		1
ICU Nurse		1	1
MS Officer	1		1
NCOIC	1		1
NCO / EMT		1	1
	7	5	12

## JTTC Feasibility Study

### Army Command Concurrence

- ✓ GPRMC
- ✓ AMEDD C&S
- ✓ Chief, Medical Corps
  - General Surgery Consultant
  - Trauma Consultant
- ✓ FORSCOM
- ✓ Army Surgeon General (14 Jan 99)

## JTTC Feasibility Study

### Joint Command Concurrence

- ✓ DMRTI
- ✓ DMRTEC (24 Nov 98)
- ✓ General Surgeon Consultants
  - USAF
  - USN
- ✓ Surgeons General (5 Feb 99)
  - USAF
  - USN



## JTTC Feasibility Study

### Joint Command Responsibilities

- ◆ USA MEDCOM
  - Contract
  - FORSCOM
- ◆ DMRTI
  - C & C
  - Admin Support
  - OC Staff
  - USAF / USN Rotations

## JTTC Feasibility Study

### Sample Joint Rotation Plan and Costs

<u>Month</u>	<u>Unit</u>	<u>Location</u>	<u>Cost</u>
Sep 99	555 FST	Fort Hood	\$ 12,232
Oct 99	250 FST	Fort Lewis	\$ 21,110
Nov 99	274 FST	Fort Bragg	\$ 20,470
			\$ 53,812
Feb 00	Navy	Portsmouth	\$ 15,110
Mar 00	Air Force	Nellis	\$ 18,550
Apr 00	Air Force	Yokota	\$ 29,790
May 00	Navy	San Diego	\$ 15,110
Jun 00	Air Force	Andrews	\$ 12,670
			\$ 91,230

# **JTTC Feasibility Study**

## **Issues**

**Joint OC Staffing**

**Funding Source**

**JAG**

– Licenses

– Liability

**Cost Benefit Analysis**

**+Emergency**

**Trauma Center**

**→ Ben Taub  
General Hospital**

**GPRMC**

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**DEPARTMENT OF THE ARMY  
41<sup>st</sup> COMBAT SUPPORT HOSPITAL  
FORT SAM HOUSTON, TEXAS 78234-6200**

REPLY TO  
ATTENTION OF

MCGA-CSH

10 February 1999

**MEMORANDUM FOR RECORD**


**SUBJECT: Outcome of The Ben Taub Pilot Project**

1. This memorandum defines the outcome of the Ben Taub Pilot Project on Combat Trauma Surgical Training (CTST) as of 10 February 1999.
2. On 14 January 1999 the Army Surgeon General approved the results of the Ben Taub Pilot Project and directed the execution of the Joint Trauma Training Center Feasibility Study as explained in the Summary / Recommendation portion of the report. The Surgeon General's approval was obtained after the following agencies and commands concurred with the concept:
  - a. Commander, Great Plains Regional Medical Center
  - b. Commander, U. S. Army Medical Department Center and School
  - c. Chief, U. S. Army Medical Corps
  - d. General Surgery Consultant to the Surgeon General
  - e. Trauma Consultant to the Surgeon General
  - f. Defense Medical Readiness Training and Education Council
  - g. U. S. Army Forces Command Surgeon
  - h. Commander 44<sup>th</sup> Medical Brigade
3. On 5 February 1999 the Surgeons General of the U. S. Air Force and U. S. Navy concurred and directed their appropriate staff agencies to supplement the U. S. Army permanent staffing.
4. As a result, a joint team of healthcare providers and administrators move to Houston in July 1999 to execute the JTTC Feasibility Study.

5. The study authors wish to acknowledge the tremendous support that the following individuals and agencies provided to enable the successful execution of this critical readiness program:

- a. MG Peake and BG Timboe provided military leadership, guidance, mentoring and support for the project.
- b. Dr. Kenneth Mattox provided a civilian-military cooperative vision, inspiration, encouragement, and support for the project.
- c. COL (ret) Coley and COL Gonzales who believed in the project and allowed the study authors to devote tremendous periods of time to execute the project.
- d. COL Sampson and COL Baskin who believed in the project and provided the advice or acute intervention necessary at critical junctures of the pilot to keep it viable.
- e. COL Srsic-Stoeher and the Brooke Army Medical Center Department of Nursing who partnered the pilot training plan and analysis of the data.
- f. MAJ Goodman who lent his exceptional abilities in data gathering and analysis. His efforts provided the cornerstone to the cost benefit analysis portion of the project.
- g. LTC Jody Rogers and the faculty of the U. S. Army Baylor program. This project represents the return on investment that the U. S. Army obtained for sending the authors to the Army Baylor Graduate Program in Healthcare Administration.
- h. The soldiers who deployed as the members of the FIRST Forward Surgical Team to conduct CTST in a civilian level 1 trauma center. Their efforts will yield a significant improvement in the combat readiness of the Armies corps surgical assets.

5. POC for this report is the undersigned at DSN 429-0266, commercial 210-916-0266, and e-mail col\_cass\_conaway@smtplink.bamc.amedd.army.mil or MAJ Kyle D: Campbell at DSN 429-2088, commercial 210-916-2088 e-mail maj\_kyle\_campbell.

  
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COL, MC  
Commanding